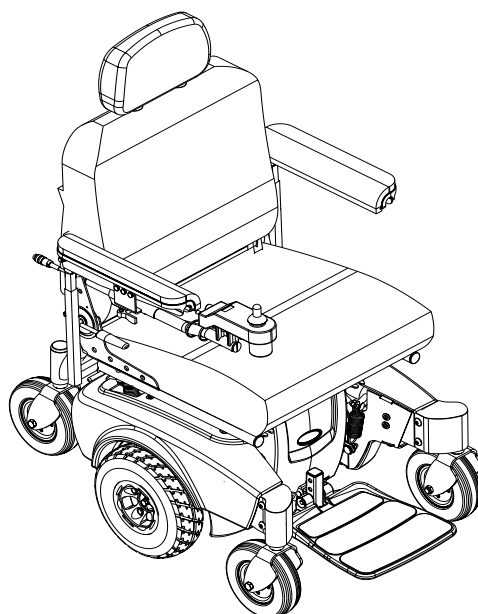


Pronto[®] M7I[™] with SureStep[®]

M7I with Van Seat



DEALER: This manual **MUST** be given to the user of the wheelchair.

USER: BEFORE using this wheelchair, read this manual and save for future reference.

For more information regarding
Invacare products, parts, and services,
please visit www.invacare.com



Yes, you can.®

WARNING

A qualified technician **MUST** perform the initial set up of this wheelchair. Also, a qualified technician **MUST** perform all procedures in the service manual.

DO NOT use this product or any available optional equipment without first completely reading and understanding these instructions and any additional instructional material such as owner's manuals, service manuals or instruction sheets supplied with this product or optional equipment. If you are unable to understand the warnings, cautions or instructions, contact a healthcare professional, dealer or technical personnel before attempting to use this equipment - otherwise, injury or damage may occur.

ACCESSORIES WARNING

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

REFERENCE DOCUMENTS

MANUAL	PART NUMBER
MK ₅ ™ NX™ Electronic Owner Manual	1110532
M7I Service Manual	1118377
Quad Link Instruction Sheet	1134844

NOTE: Updated versions of this manual are available on www.invacare.com.

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REGISTER YOUR PRODUCT

The benefits of registering include:

1. Safeguarding your investment.
2. Ensuring long-term maintenance and servicing of your product.
3. Receiving updates with product information, maintenance tips and industry news.

Register ONLINE at warranty.invacare.com

Please have your model number and purchase date available to complete your registration.

Any registration information you submit will only be used by Invacare Corporation and protected as required by applicable laws and regulations.

SPECIAL NOTES

Signal words are used in this manual and apply to hazards or unsafe practices which could result in personal injury or property damage. Refer to the table below for definitions of the signal words.

SIGNAL WORD	MEANING
DANGER	Danger indicates an imminently hazardous situation which, if not avoided, will result in death or serious injury.
WARNING	Warning indicates a potentially hazardous situation which, if not avoided, could result in death or serious injury.
CAUTION	Caution indicates a potentially hazardous situation which, if not avoided, may result in property damage.

NOTICE

THE INFORMATION CONTAINED IN THIS DOCUMENT IS SUBJECT TO CHANGE WITHOUT NOTICE.

WHEELCHAIR USER

As a manufacturer of wheelchairs, Invacare endeavors to supply a wide variety of wheelchairs to meet many needs of the end user. However, final selection of the type of wheelchair to be used by an individual rests solely with the user and his/her healthcare professional capable of making such a selection.

WHEELCHAIR TIE-DOWN RESTRAINTS AND SEAT RESTRAINTS

As of this date, the Department of Transportation has not approved any tie-down systems for transportation of a user while in a wheelchair, in a moving vehicle of any type. It is Invacare's position that users of wheelchairs should be transferred into appropriate seating in vehicles for transportation and use be made of the restraints made available by the auto industry. Invacare cannot and does not recommend any wheelchair transportation systems.

WARNING

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

The seat positioning strap is a positioning belt only. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt **MUST** be replaced immediately.

POWERED SEATING SYSTEMS ONLY - This seating system has been customer designed and will be assembled to the wheelchair base before delivery to the user. The information contained in this manual is for maintaining and adjusting the seating system. There are very few adjustments that can safely be made by the user. If there is a procedure or adjustment that needs to be performed on the seating system that is not in this manual, **DO NOT** perform that procedure. Have the seating system serviced by a qualified technician.

⚠ WARNING

The drive behavior initially experienced by the user may be different from other chairs previously used. This Power Wheelchair has Invacare's SureStep technology, a feature that provides the wheelchair with optimum traction and stability when driving forward over transitions and thresholds of up to 2-inches. The following warnings apply specifically to the SureStep Feature:

- **DO NOT** use on inclines greater than 9°.
- **DO NOT** use on inclines with wet, slippery, icy or oily surfaces. This may include certain painted or otherwise treated wood surfaces.
- **DO NOT** traverse down ramps at high speed. Doing so will reduce traction and increase stopping distance.
- The end user's weight can materially affect traction on sloped surfaces. Great care should be taken when traversing such slopes.

To determine and establish your particular safety limits, practice use of this product on various sloping surfaces in the presence of a qualified healthcare provider before attempting active use of this wheelchair. Other general warnings listed within this document also apply.

Wheelchairs should be examined during maintenance for signs of corrosion (water exposure, incontinence, etc.). Electrical components damaged by corrosion should be replaced **IMMEDIATELY**.

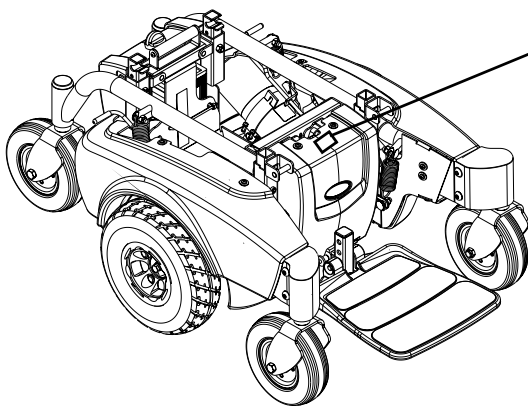
Wheelchairs that are used by incontinent users and/or are frequently exposed to water may require replacement of electrical components more frequently.

LABEL LOCATIONS

Wiring Label on M7I

NOTE: Wiring Label on M7I Standard with MK₅ NX Controller.

Serial Number is located underneath seat in rear, should not have to remove seat.



⚠ WARNING The POSITIVE (+) RED Battery Cable MUST connect to the POSITIVE (+) Battery Terminal(s)/ Post(s). The NEGATIVE (-) BLACK Battery Cable MUST connect to the NEGATIVE (-) Battery Terminal(s)/Post(s). DO NOT allow Battery Cable(s) to contact the opposite Battery Terminal(s)/Post(s). Install protective caps on POSITIVE (+) and NEGATIVE (-) battery terminals. Replace cable(s) immediately if cable(s) insulation becomes damaged. Failure to observe these warnings may result in an electrical short with serious personal injury and/or damage to the electrical system. See Owner's Manual. DO NOT remove fuse or mounting hardware from POSITIVE (+) RED battery cable mounting screw. DO NOT REMOVE THIS LABEL.

FRONT BATTERY

BLACK Battery Cable
U-1 BATT.
FUSE
RED Battery Cable
BLACK Battery Cable

REAR BATTERY

FUSE
RED Battery Cable
U-1 BATT.
BLACK Battery Cable

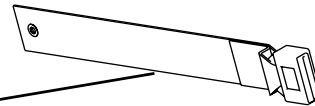
75 AMP FS-HVBF Fuse
Washers
Nut
RED Battery Cable
DO NOT REMOVE
Insulator Nut
POSITIVE (+) Battery Terminal
RED Battery Cable Mounting

P/N 1118381

NOTE: Auto style seat positioning strap shown. This label is also on the airline style seat positioning strap.

⚠ WARNING

This seat/chest positioning strap is **NOT** intended for occupant restraint in a moving motor vehicle, and **DOES NOT** conform with ANSI/RESNA WC/19. If signs of wear appear, positioning strap MUST be replaced **IMMEDIATELY**.



TYPICAL PRODUCT PARAMETERS

Prono M7I

	18-INCH VAN SEAT	20-INCH VAN SEAT
SEAT WIDTH:	18 inches	20 inches
SEAT DEPTH:	16-18 inches	18-20 inches
BACK HEIGHT:	18 inches	18 inches
SEMI-RECLINE	35°-115°	35°-115°
BACK ANGLE RANGE:	N/A	N/A
UPHOLSTERY:	Grey Cloth, Grey Vinyl, Tan Vinyl	
SEAT TO FLOOR:	21-23 inches (cushion not compressed)	
OVERALL WIDTH OF BASE (W/O JOYSTICK):	24 inches	
OVERALL HEIGHT:	48 inches	
OVERALL LENGTH		
FOOTBOARD FOLDED:	35 inches	
FOOTBOARD EXTENDED:	39½ inches	
WEIGHT^I		
WITHOUT BATTERIES:	150 pounds	
WITH BATTERIES:	203 pounds	
SHIPPING (WITHOUT BATTERIES):	200 pounds	
DRIVE WHEELS/TIRES (PNEUMATIC)	10 x 3½ inches	
CASTERS W/PRECISION SEALED BEARINGS:	6 x 2 inches	
FOOTRESTS/LEGRESTS:	Flip Up, Depth and Height Adjustable, Footboard, Swing-away Front Rigging, Elevating Legrest	
ARMRESTS:	Adjustable Width, Angle and Height	
BATTERY REQUIREMENTS:	Use only U1 batteries (Quantity - 2)	
WEIGHT LIMITATION:	up to 300 pounds	
INCLINE CAPABILITY:	9°	
PERFORMANCE		
SPEED:	up to 4 MPH	
TURNING RADIUS:	19½ inches with footboard	
**RANGE (VARIABLE):	up to 12 miles	

I. Includes seating systems and accessories.

****NOTE:** Values for range are calculated for maximum chair weight rating using largest batteries applicable (U1), per test procedures described in ANSI/RESNA WC/VOL2-1998 Section 4 and meet federal reimbursement requirements for this product. While considered typical, they are derived based on certain ideal conditions. Variances in battery condition, user weight, usage pattern or overall terrain conditions will result in actual values for range that differ from these stated values. Users should become accustomed to how their unique conditions impact their individual results. Users should become familiar with the battery discharge indicator on the joystick to determine the range of their wheelchair. Refer to Battery Charger Operation on page 62 for more information about the battery discharge indicator.

SECTION 7—GENERAL GUIDELINES

WARNING

SECTION 1 - GENERAL GUIDELINES contains important information for the safe operation and use of this product.

Controller Settings/Repair or Service

Set-up of the Electronics Control Unit is to be performed **ONLY** by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur if improperly set-up or adjusted.

DO NOT service or adjust your wheelchair while occupied, unless otherwise noted.

Wheelchairs should be examined during maintenance for signs of corrosion (water exposure, incontinence, etc.). Electrical components damaged by corrosion should be replaced **IMMEDIATELY**.

Wheelchairs that are used by incontinent users and/or are frequently exposed to water may require replacement of electrical components more frequently.

Accessories Information

EXTREME care should be exercised when using oxygen in close proximity to electric circuits and other combustible materials. Contact your oxygen supplier for instruction in the use of oxygen.

Invacare products are specifically designed and manufactured for use in conjunction with Invacare accessories. Accessories designed by other manufacturers have not been tested by Invacare and are not recommended for use with Invacare products.

Operation Information

Performance adjustments should only be made by professionals of the healthcare field or persons fully conversant with this process and the driver's capabilities. Incorrect settings could cause injury to the driver, bystanders, damage to the wheelchair and to surrounding property.

After the wheelchair has been set-up, check to make sure that the wheelchair performs to the specifications entered during the set-up procedure. If the wheelchair does **NOT** perform to specifications, turn the wheelchair **Off** immediately and reenter set-up specifications. Repeat this procedure until the wheelchair performs to specifications.

ALWAYS shift your weight in the direction you are turning. **DO NOT** shift your weight in the opposite direction of the turn. Shifting your weight in the opposite direction of the turn may cause the inside drive wheel to lose traction and the wheelchair to tip over.

DO NOT shift your weight or sitting position toward the direction you are reaching as the wheelchair may tip over.

DO determine and establish your particular safety limits by practicing bending, reaching and transferring activities in the presence of a qualified healthcare professional before attempting active use of the wheelchair.

DO NOT attempt to reach objects if you have to move forward in the seat.

DO NOT attempt to reach objects if you have to pick them up from the floor by reaching down between your knees.

DO NOT lean over the top of the back upholstery to reach objects behind you as this may cause the wheelchair to tip over.

DO NOT store items under seat - interference with seat latch may result.

DO NOT use an escalator to move a wheelchair between floors. Serious bodily injury may occur.

Before attempting to transfer in or out of the wheelchair, every precaution should be taken to reduce the gap distance. Turn both casters parallel to the object you are transferring onto. Also be certain the power is Off and wheel locks are engaged to prevent the wheels from moving.

DO NOT engage or disengage the motor release levers until the power is in the Off position.

DO NOT operate on roads, streets or highways.

DO NOT climb, go up or down ramps or traverse slopes greater than 9°.

Invacare strongly recommends proceeding down ramps or slopes at half speed or slower and to avoid hard braking or sudden stops.

DO NOT leave elevating legrests in the fully extended position when proceeding down ramps or slopes.

DO NOT attempt to move up or down an incline with a water, ice or oil film.

DO NOT attempt to drive over curbs or obstacles. Doing so may cause your wheelchair to turn over and cause bodily harm or damage to the wheelchair.

DO NOT leave the power button in the On position when entering or exiting your wheelchair.

DO NOT attempt to lift the wheelchair by lifting on any removable (detachable) parts. Lifting by means of any removable (detachable) parts of a wheelchair may result in injury to the user or damage to the wheelchair.

DO NOT stand on the frame of the wheelchair.

ALWAYS use anti-tippers. When outdoors on wet, soft ground or on gravel surfaces, anti-tippers may not provide the same level of protection against tip over. Extra caution must be observed when traversing such surfaces..

DO NOT stand on the footplates or footboard. When getting in or out of the wheelchair, make sure that the footboard or footplates are in the upward position or swing the footrests towards the outside of the wheelchair.

ALWAYS wear your seat positioning strap. The seat positioning strap is a positioning belt ONLY. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt must be replaced immediately.

DO NOT adjust the rear seat posts higher than the front seat posts.

Before performing any maintenance, adjustment or service verify that On/Off switch on the joystick is in the OFF position.

Avoid storing or using the wheelchair near open flame or combustible products. Serious injury or damage to property may result.

ALWAYS keep hands and fingers clear of moving parts to avoid injury.

NEVER leave an unoccupied wheelchair on an incline.

DO NOT attempt to stop a moving wheelchair with wheel locks. Wheel locks are not brakes.

ALWAYS use anti-tippers. When outdoors on wet, soft ground or on gravel surfaces, anti-tippers may not provide the same level of protection against tip over. Extra caution must be observed when traversing such surfaces.

DO NOT allow the user to leave the wheelchair while the seat is tilted. ALWAYS return the seat to upright position when transferring the user in or out of the wheelchair.

Make sure detent balls of the quick-release pin are fully released before operating the wheelchair.

The detent balls MUST be protruding past the top of the seat plate assembly for a positive lock.

Keep detent balls clean.

Batteries

The warranty and performance specifications contained in this manual are based on the use of deep cycle gel cell batteries. Invacare strongly recommends their use as the power source for this unit.

Carefully read battery/battery charger information prior to installing, servicing or operating your wheelchair.

The use of rubber gloves is recommended when working with batteries.

Some battery manufacturers mold a carrying strap and/or hold down flanges directly into the battery case. Batteries that interfere with the battery box cannot be used for these applications. Attempting to “wedge” a battery into a battery box may damage the box, the battery and/or be a fire hazard, resulting in serious injury or further damage to property.

Charging Batteries

DANGER

When using an extension cord, use only a three wire extension cord having at least 16 AWG (American Wire Gauge) wire and the same or higher electrical rating as the device being connected. Use of improper extension cord could result in risk of fire and electric shock. Three prong to two prong adapters should not be used. Use of three prong adapters can result in improper grounding and present a shock hazard to the user.

NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals.

DO NOT attempt to recharge the batteries and operate the wheelchair at the same time.

DO NOT operate wheelchair with extension cord attached to the AC cable.

DO NOT attempt to recharge the batteries when the wheelchair has been exposed to ANY type of moisture.

DO NOT attempt to recharge the batteries when the wheelchair is outside.

DO NOT sit in the wheelchair while charging the batteries.

DO NOT attempt to recharge batteries using BOTH the on-board battery charger and an independent battery charger (plugged into the joystick charger port) at the SAME time. Doing so will reduce the life of the batteries.

Read and carefully follow the manufacturer's instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

After charging batteries, ALWAYS make sure that the battery charger cord is securely wrapped and stored within the hook and loop strap assembly on the rear of the battery tray. Failure to do so may result in damage to the cord or personal injury to the user or bystanders.

Ensure the pins of the extension cord plug are the same number, size, and shape as those on the charger.

DO NOT under any circumstances cut or remove the round grounding plug from the charger AC cable plug or the extension cord plug.

Grounding Instructions

DO NOT, under any circumstances, cut or remove the round grounding prong from any plug used with or for Invacare products. Some devices are equipped with three-prong (grounding) plugs for protection against possible shock hazards and fire. Where a two-prong wall receptacle is encountered, it is the personal responsibility and obligation of the customer to contact a qualified electrician and have the two-prong receptacle replaced with a properly grounded three-prong wall receptacle in accordance with the National Electrical Code. If you must use an extension cord, use ONLY a three-wire extension cord having the same or higher electrical rating as the device being connected. In addition, Invacare has placed RED/ORANGE warning tags on some equipment. DO NOT remove these tags.

Rain Test

Invacare has tested its power wheelchairs in accordance with ISO 7176 “Rain Test.” This provides the end user or his/her assistant sufficient time to remove his/her power wheelchair from a rain storm and retain wheelchair operation.

DO NOT leave power wheelchair in a rain storm of any kind.

DO NOT use power wheelchair in a shower.

DO NOT store power wheelchair in a damp area for an extended period of time.

Direct exposure to excessive rain or dampness may cause the wheelchair to malfunction electrically and mechanically, may cause the wheelchair to prematurely rust or may damage the upholstery.

Check to ensure that the RED and GREY battery terminal caps are secured in place, joystick boot is NOT torn or cracked where water can enter and that all electrical connections are secure at all times.

DO NOT use the wheelchair if the joystick boot is torn or cracked. If the joystick boot becomes torn or cracked, replace IMMEDIATELY.

Weight Training

Invacare DOES NOT recommend the use of its wheelchairs as a weight training apparatus. Invacare wheelchairs have NOT been designed or tested as a seat for any kind of weight training. If occupant uses said wheelchair as a weight training apparatus, Invacare shall NOT be liable for bodily injury and the warranty is void.

Weight Limitation

The weight limitation of M71 wheelchairs without powered seating systems is up to 300 lbs.

SECTION 8—EMI INFORMATION

WARNING

CAUTION: IT IS VERY IMPORTANT THAT YOU READ THIS INFORMATION REGARDING THE POSSIBLE EFFECTS OF ELECTROMAGNETIC INTERFERENCE ON YOUR POWERED WHEELCHAIR.

Electromagnetic Interference (EMI) From Radio Wave Sources

Powered wheelchairs and motorized scooters (in this text, both will be referred to as powered wheelchairs) may be susceptible to electromagnetic interference (EMI), which is interfering electromagnetic energy (EM) emitted from sources such as radio stations, TV stations, amateur radio (HAM) transmitters, two way radios, and cellular phones. The interference (from radio wave sources) can cause the powered wheelchair to release its brakes, move by itself, or move in unintended directions. It can also permanently damage the powered wheelchair's control system. The intensity of the interfering EM energy can be measured in volts per meter (V/m). Each powered wheelchair can resist EMI up to a certain intensity. This is called its "immunity level." The higher the immunity level, the greater the protection. At this time, current technology is capable of achieving at least a 20 V/m immunity level, which would provide useful protection from the more common sources of radiated EMI.

There are a number of sources of relatively intense electromagnetic fields in the everyday environment. Some of these sources are obvious and easy to avoid. Others are not apparent and exposure is unavoidable. However, we believe that by following the warnings listed below, your risk to EMI will be minimized.

The sources of radiated EMI can be broadly classified into three types:

- 1) Hand-held Portable transceivers (transmitters-receivers with the antenna mounted directly on the transmitting unit. Examples include: citizens band (CB) radios, "walkie talkie", security, fire and police transceivers, cellular telephones, and other personal communication devices).

NOTE: Some cellular telephones and similar devices transmit signals while they are ON, even when not being used.

- 2) Medium-range mobile transceivers, such as those used in police cars, fire trucks, ambulances and taxis. These usually have the antenna mounted on the outside of the vehicle; and
- 3) Long-range transmitters and transceivers, such as commercial broadcast transmitters (radio and TV broadcast antenna towers) and amateur (HAM) radios.

NOTE: Other types of hand-held devices, such as cordless phones, laptop computers, AM/FM radios, TV sets, CD players, cassette players, and small appliances, such as electric shavers and hair dryers, so far as we know, are not likely to cause EMI problems to your powered wheelchair.

⚠ WARNING**Powered Wheelchair Electromagnetic Interference (EMI)**

Because EM energy rapidly becomes more intense as one moves closer to the transmitting antenna (source), the EM fields from hand-held radio wave sources (transceivers) are of special concern. It is possible to unintentionally bring high levels of EM energy very close to the powered wheelchair's control system while using these devices. This can affect powered wheelchair movement and braking. Therefore, the warnings listed below are recommended to prevent possible interference with the control system of the powered wheelchair.

Electromagnetic interference (EMI) from sources such as radio and TV stations, amateur radio (HAM) transmitters, two-way radios, and cellular phones can affect powered wheelchairs and motorized scooters.

FOLLOWING THE WARNINGS LISTED BELOW SHOULD REDUCE THE CHANCE OF UNINTENDED BRAKE RELEASE OR POWERED WHEELCHAIR MOVEMENT WHICH COULD RESULT IN SERIOUS INJURY.

- 1) Do not operate hand-held transceivers (transmitters receivers), such as citizens band (CB) radios, or turn ON personal communication devices, such as cellular phones, while the powered wheelchair is turned ON;
- 2) Be aware of nearby transmitters, such as radio or TV stations, and try to avoid coming close to them;
- 3) If unintended movement or brake release occurs, turn the powered wheelchair OFF as soon as it is safe;
- 4) Be aware that adding accessories or components, or modifying the powered wheelchair, may make it more susceptible to EMI (NOTE: There is no easy way to evaluate their effect on the overall immunity of the powered wheelchair); and
- 5) Report all incidents of unintended movement or brake release to the powered wheelchair manufacturer, and note whether there is a source of EMI nearby.

Important Information

- 1) 20 volts per meter (V/m) is a generally achievable and useful immunity level against EMI (as of May 1994) (the higher the level, the greater the protection);
- 2) This device has been tested to a radiated immunity level of 20 volts per meter;
- 3) The immunity level of the product is unknown.

Modification of any kind to the electronics of this wheelchair as manufactured by Invacare may adversely affect the EMI immunity levels.

SECTION 9—SAFETY/HANDLING OF WHEELCHAIRS

“Safety and Handling” of the wheelchair requires the close attention of the wheelchair user as well as the assistant. This manual points out the most common procedures and techniques involved in the safe operation and maintenance of the wheelchair. It is important to practice and master these safe techniques until you are comfortable in maneuvering around the frequently encountered architectural barriers.

Use this information only as a “basic” guide. The techniques that are discussed on the following pages have been used successfully by many.

Individual wheelchair users often develop skills to deal with daily living activities that may differ from those described in this manual. Invacare recognizes and encourages each individual to try what works best for him/her in overcoming architectural obstacles that they may encounter, however ALL WARNINGS and CAUTIONS given in this manual MUST be followed. Techniques in this manual are a starting point for the new wheelchair user and assistant with “safety” as the most important consideration for all.

Stability and Balance

WARNING

ALWAYS wear your seat positioning strap. The seat positioning strap is a positioning belt **ONLY**. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt must be replaced immediately

DO NOT climb, go up or down ramps or traverse slopes greater than 9°.

Invacare strongly recommends proceeding down ramps or slopes at half speed or slower and to avoid hard braking or sudden stops.

DO NOT leave elevating legrests in the fully extended position when proceeding down ramps or slopes.

Proper positioning is essential for your safety. When reaching, leaning, bending or bending forward, it is important to use the casters as a tool to maintain stability and balance.

DO NOT attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.

Be aware that carrying heavy objects on your lap while occupying the wheelchair may adversely affect the stability of the wheelchair, resulting in serious bodily injury to the user, damage to the wheelchair and surrounding property.

This wheelchair has been designed to accommodate one individual. If more than one individual occupies the wheelchair this may adversely affect the stability of the wheelchair, resulting in serious bodily injury to the user and passenger and damage to the wheelchair and surrounding property.

To assure stability and proper operation of your wheelchair, you must at all times maintain proper balance. Your wheelchair has been designed to remain upright and stable during normal daily activities as long as you do not move beyond the center of gravity. **DO NOT** lean forward out of the wheelchair any further than the length of the armrests.

Coping with Everyday Obstacles

NOTE: For this procedure, refer to FIGURE 9.1.

⚠ WARNING

DO NOT attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.

Many activities require the wheelchair user to reach, bend and transfer in and out of the wheelchair. These movements will cause a change to the normal balance, center of gravity, and weight distribution of the wheelchair. To determine and establish your particular safety limits, practice bending, reaching and transferring activities in several combinations in the presence of a qualified healthcare professional **BEFORE** attempting active use of the wheelchair.

Proper positioning is essential for your safety. When reaching, leaning, bending or bending forward, it is important to use the casters as a tool to maintain stability and balance.

The Pronto M7I with SureStep has a weight limitation of 300 lbs.

M7I - For users over 250 lbs, the seat **MUST** be mounted in the furthest rearward position and the front seat posts **MUST** be in the 1-inch raised position or lower.

DO NOT adjust the rear seat posts higher than the front seat posts.

Coping with the irritation of everyday obstacles can be alleviated somewhat by learning how to manage your wheelchair. Keep in mind your center of gravity to maintain stability and balance.

While the walking beam allows to traverse up to a 2-inch bump or threshold, stopping after the wheels cross the bump poses a problem. The wheelchair cannot reverse over the bump at this point. Continue forward and then turn around.

While the M7I is designed for use primarily in and around the home, the provider should determine whether this wheelchair is suitable for the actual environment the wheelchair will be used in.

DO NOT go down ramp at full speed. Some seat/back positions will cause wheelchair to feel unstable.

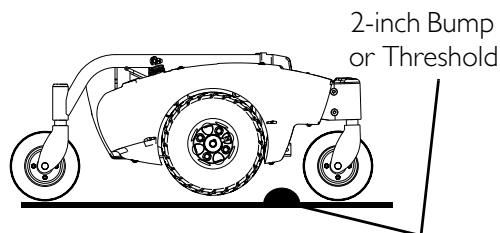


FIGURE 9.1 Coping with Everyday Obstacles

CAUTION

Be aware of condition of ramp. Traction will be diminished/nonexistent on a slippery surface. Proceed with caution.

A Note to Wheelchair Assistants

When assistance to the wheelchair user is required, remember to use good body mechanics. Keep your back straight and bend your knees whenever tipping wheelchair or traversing curbs or other impediments.

Also, be aware of detachable parts such as arms or legrests. These must NEVER be used to move the wheelchair or as lifting supports, as they may be inadvertently released, resulting in possible injury to the user and/or assistant(s).

When learning a new assistance technique, have an experienced assistant help you before attempting it alone.

Pinch Points

NOTE: For this procedure, refer to FIGURE 9.2.

⚠ WARNING

Pinch point may occur when adjusting the arm angle position (Detail “A”).

Pinch point may occur when rotating the footboard assembly (Detail “B”).

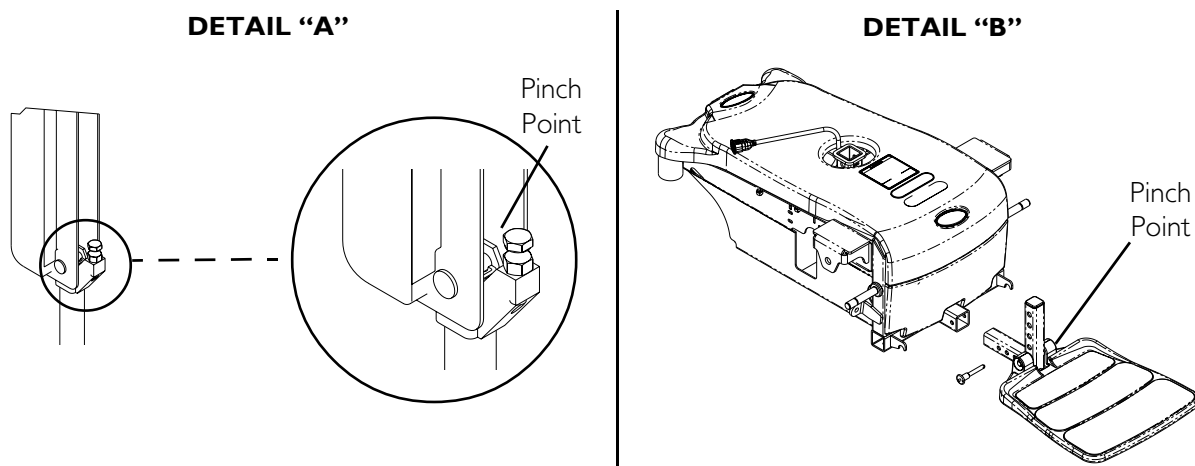


FIGURE 9.2 Pinch Points

Lifting/Stairways

NOTE: For this procedure, refer to FIGURE 9.3 on page 21.

⚠ WARNING

DO NOT attempt to move an occupied power wheelchair between floors using a stairway. Use an elevator to move an occupied power wheelchair between floors. If moving a power wheelchair between floors by means of a stairway, the occupant **MUST** be removed and transported independently of the power wheelchair.

Extreme caution is advised when it is necessary to move an unoccupied power wheelchair up or down the stairs. Invacare recommends using two assistants and making thorough preparations.

Use **ONLY** secure, nondetachable parts for hand-hold supports.

It is strongly recommended to lift the wheelchair only by the rear frame and the front forks - otherwise injury or damage may occur.

DO NOT attempt to lift the wheelchair by any removable (detachable) parts. Lifting by means of any removable (detachable) parts of a wheelchair may result in injury to the user or damage to the wheelchair.

The weight of the wheelchair with batteries and without the user is between 203 and 318 lbs. Use proper lifting techniques (lift with your legs) to avoid injury.

Follow this procedure for moving the wheelchair between floors when an elevator is NOT available or lifting the wheelchair is necessary:

NOTE: When using a stairway to move the wheelchair, seat and any accessories, move all wheelchair components away from the stairway prior to reassembly.

1. Remove the occupant from the wheelchair.
2. M71 Without Powered Seating System Only - Disassemble the wheelchair. Refer to Transporting the Wheelchair on page 67.
3. Bend your knees and keep your back straight.
4. Perform one of the following:
 - A. M71 Without Powered Seating System Only - Using nonremovable (non-detachable) parts of the assemblies, transfer the individual pieces.
 - B. M71 With Formula PTO Plus System Only - Using the rear frame and the front edge of the front forks as hand hold supports, transfer the wheelchair base to the desired location.
5. Move the wheelchair or assemblies away from the stairway.
6. M71 Without Powered Seating System Only - Reassemble the wheelchair. Refer to Transporting the Wheelchair on page 67.

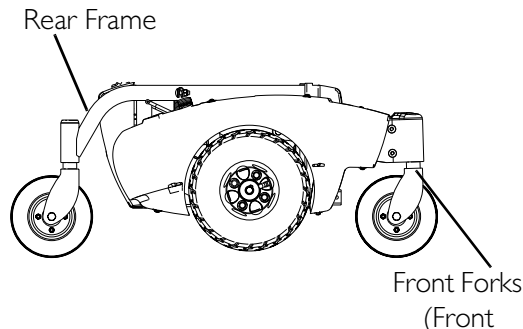


FIGURE 9.3 Lifting/Stairways - Hand Hold Supports

⚠ WARNING: ESCALATORS

DO NOT use an escalator to move a wheelchair between floors. Serious bodily injury may occur.

Transferring To and From Other Seats

⚠ WARNING

ALWAYS turn the wheelchair power **OFF** and engage the **Motor Release Levers** to prevent the wheels from moving **BEFORE** attempting to transfer in or out of the wheelchair. Also, make sure every precaution is taken to reduce the gap distance by aligning both the front **AND** rear casters parallel with the object you are transferring onto.

CAUTION

When transferring, position yourself as far back as possible in the seat. This will prevent broken screws, damaged upholstery and the possibility of the wheelchair tipping forward.

NOTE: For this procedure, refer to FIGURE 9.4.

NOTE: This activity may be performed independently provided you have adequate mobility and upper body strength.

1. Position the wheelchair as close as possible along side the seat to which you are transferring, with the rear casters pointing away from it.
2. After the wheelchair is positioned properly for transfer, verify that the Motor Release Levers are engaged. Refer to Engaging/Disengaging Motor Release Lever on page 53.



FIGURE 9.4 Transferring To and From Other Seats

3. Flip back or remove arm on side of wheelchair you are transferring from.
4. Shift body weight into seat with transfer.

During independent transfer, little or no seat platform will be beneath you. Use a transfer board if at all possible.

Reaching, Leaning and Bending - Forward

⚠ WARNING

DO NOT attempt to reach objects if you have to move forward in the seat or pick them up from the floor by reaching down between your knees.

NOTE: For this procedure, refer to FIGURE 9.5.

Position the front and rear casters so that they are extended as far forward as possible and engage Motor Release Levers.

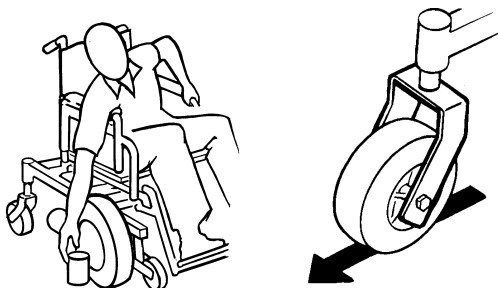


FIGURE 9.5 Reaching, Leaning and Bending - Forward

Reaching and Bending - Backward

⚠ WARNING

DO NOT lean over the top of the back upholstery. This will change your center of gravity and may cause you to tip over.

NOTE: For this procedure, refer to FIGURE 9.6.

Position wheelchair as close as possible to the desired object. Point the front and rear casters rearward to create the longest possible wheelbase. Reach back only as far as your arm will extend without changing your sitting position.



FIGURE 9.6 Reaching and Bending - Backward

SECTION 10—SAFETY INSPECTION/TROUBLESHOOTING

NOTE: Every six months or as necessary take your wheelchair to a qualified technician for a thorough inspection and servicing. Regular cleaning will reveal loose or worn parts and enhance the smooth operation of your wheelchair. To operate properly and safely, your wheelchair must be cared for just like any other vehicle. Routine maintenance will extend the life and efficiency of your wheelchair.

Safety Inspection Checklists

Initial adjustments should be made to suit your personal body structure needs and preference. Thereafter follow these maintenance procedures:

Inspect/Adjust Initially

- ☐ Ensure wheelchair rolls straight (no excessive drag or pull to one side).
- ☐ Ensure adjustable height arms operate and lock securely.
- ☐ Ensure arm pivot points are free of wear and looseness.
- ☐ Inspect seat and back upholstery for rips or sagging.
- ☐ Ensure armrest pads sit flush against arm tubes.
- ☐ Ensure seat release latch is functional. Replace if necessary.
- ☐ Ensure wheel mounting bolts are secure on drive wheels.
- ☐ Ensure no excessive side movement or binding when drive wheels are lifted and spun when disengaged (freewheeling).
- ☐ Ensure wheel/fork assembly has proper tension when caster is spun. Caster should come to a gradual stop.

CAUTION

As with any vehicle, wheels and tires should be checked periodically for cracks and wear and should be replaced as necessary.

- ☐ Loosen/tighten caster locknut if wheel wobbles noticeably or binds to a stop.
- ☐ Ensure all caster/wheel/fork/headtube fasteners are secure.
- ☐ Inspect tires for flat spots and wear.
- ☐ Clean upholstery and armrests.
- ☐ Check that all labels are present and legible. Replace if necessary.
- ☐ Ensure the casters are free of debris.

Inspect/Adjust Weekly

- ☐ Inspect tires for flat spots and wear.
- ☐ Ensure the casters are free of debris.

Inspect/Adjust Monthly

- ☐ Ensure arm pivot points are free of wear and looseness.
- ☐ Ensure wheel mounting bolts are secure on drive wheels.
- ☐ Ensure no excessive side movement or binding when drive wheels are lifted and spun when disengaged (free-wheeling).
- ☐ Ensure wheel/fork assembly has proper tension when caster is spun. Caster should come to a gradual stop.

CAUTION

As with any vehicle, wheels and tires should be checked periodically for cracks and wear and should be replaced as necessary.

- ☐ Loosen/tighten caster locknut if wheel wobbles noticeably or binds to a stop.
- ☐ Ensure all caster/wheel/fork/headtube fasteners are secure.
- ☐ Inspect for any loose hardware on the wheelchair.
- ☐ Inspect seat positioning strap for any signs of wear. Ensure buckle latches. Verify hardware that attaches strap to frame is secure and undamaged. Replace if necessary.
- ☐ Ensure the casters are free of debris.
- ☐ Check that all labels are present and legible. Replace if necessary.

Inspect/Adjust Periodically

- ☐ Ensure wheelchair rolls straight (no excessive drag or pull to one side).
- ☐ Ensure adjustable height arms operate and lock securely.
- ☐ Ensure armrest pads sit flush against arm tubes.
- ☐ Inspect seat and back upholstery for rips or sagging.
- ☐ Ensure seat release latch is not worn. Replace if necessary.
- ☐ Clean upholstery and armrests.
- ☐ Inspect the seat positioning strap for wear. Replace if worn or damaged.
- ☐ Inspect charger AC power cord for damage. Replace if necessary.
- ☐ Check that all labels are present and legible. Replace if necessary.
- ☐ Inspect electrical components for signs of corrosion. Replace if corroded or damaged.
- ☐ Ensure the casters are free of debris.


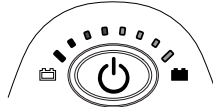
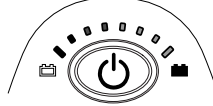
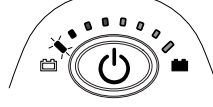
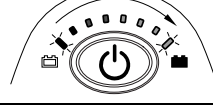

Troubleshooting Guide

SYMPTOM	PROBABLE CAUSE	SOLUTIONS
Batteries draw excessive current when charging.	Battery failure.	Have batteries checked for shorted cell. Replace if necessary.
	Electrical malfunction.	Contact Dealer/Invacare for service.
Battery indicator flashes the charge level is low - immediately after recharge.	Battery failure.	Check batteries for shorted cell. Replace if necessary.
	Malfunctioning battery charger.	Contact Dealer/Invacare for service.
	Electrical malfunction	Contact Dealer/Invacare for service.
Battery indicator flashes the charge level is low - too soon after being recharged.	Batteries not charged.	Have charger checked.
	Weak batteries.	Replace batteries if necessary. Contact Dealer/Invacare for service.
Motor “chatters” or runs irregular.	Electrical malfunction.	Contact Dealer/Invacare for service.
Joystick erratic or does not respond as desired.	Damaged motor coupling.	Contact Dealer/Invacare for service.
	Electrical malfunction.	Contact Dealer/Invacare for service.
	Controller programmed improperly.	Reprogram controller (Refer to MK ₅ EX™ or MK ₅ NX™ electronics owner’s manual supplied with wheelchair).
Wheelchair does not respond to commands.	Poor battery terminal connection.	Have terminals cleaned.
Power indicator off - even after recharging.	Electrical malfunction.	Contact Dealer/Invacare for service.

SPJ™+ Joysticks

The joystick information gauge and the service indicator give indications of the type of fault or error detected by the control module. When a fault is detected, the wheelchair may stop and not drive. The LEDs on the information gauge may flash in a particular pattern or the service indicator light will flash. The number or type of flashes indicates the nature of the error. If multiple errors are found, only the first error encountered by the control module will be displayed.

Information Gauge Display Diagnostics

DISPLAY	DESCRIPTION	DEFINITION	COMMENTS
 <p>Information Gauge Display</p>			
	All LEDs are off.	Power is off.	
	All LEDs are on.	Power is on.	Fewer than three LEDs on implies reduced battery charge.
	Left RED LED is flashing.	Battery charge is low.	The batteries should be charged as soon as possible.
	Left to Right “chase” alternating with steady display.	Joystick is in programming, inhibit and/or charging mode.	The steady LEDs indicate the current state of the battery charge.
	All LEDs are flashing slowly.	Joystick has detected Out-of-Neutral-at-Power-Up mode.	Release the joystick back to Neutral.

Service Indicator Light Diagnostics

NUMBER OF FLASHES	ERROR CODE DESCRIPTION	POSSIBLE SOLUTION
1	User Fault	Release joystick to neutral and try again.
2	Battery Fault	Charge the batteries. Refer to <u>Charging Batteries</u> on page 61. Check that battery cables are connected properly. Refer to <u>Connecting/Disconnecting Battery Cables</u> on page 58. If necessary, replace batteries. Refer to <u>Removing/Installing Batteries from/into Battery Tray</u> on page 56.
3	Left Motor Fault	Contact Invacare/Dealer for service.
4	Right Motor Fault	Contact Invacare/Dealer for service.
5	Left Park Brake Fault	Contact Invacare/Dealer for service.
6	Right Park Brake Fault	Contact Invacare/Dealer for service.
7	Remote Fault	Check to make sure joystick is connected properly. Contact Invacare/Dealer for service.
8	Controller Fault	Contact Invacare/Dealer for service.
9	Communications Fault	Contact Invacare/Dealer for service.
10	General Fault	Contact Invacare/Dealer for service.
11	Incompatible or incorrect Remote	Wrong type of remote connected. Contact Invacare/Dealer for service.

Checking Battery Charge Level

The following “Do’s” and “Don’ts” are provided for your convenience and safety.

DON'T	DO
Don't perform any installation or maintenance without first reading this manual.	Read and understand this manual and any service information that accompanies a battery and charger before operating the wheelchair.
Don't perform installation or maintenance of batteries in an area that could be damaged by battery spills.	Move the wheelchair to a work area before cleaning terminals, or opening battery box.
Don't make it a habit to discharge batteries to the lowest level.	Recharge as frequently as possible to maintain a high charge level and extend battery life.
Don't use randomly chosen batteries or chargers.	Follow recommendations in this manual when selecting a battery or charger.
Don't put new batteries into service before charging.	Fully charge a new battery before using.
Don't tip or tilt batteries.	Use a carrying strap to remove, move or install a battery.
Don't tap on clamps and terminals with tools.	Push battery clamps on the terminals. Spread clamps wider if necessary.
Don't mismatch your battery and chargers.	Use ONLY a GEL charger for a GEL battery.

SECTION 11—WHEELCHAIR OPERATION

⚠ WARNING

After ANY adjustments, repair or service and BEFORE use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

Set-up of the Electronic Control Unit is to be performed only by a qualified technician. The final adjustments of the controller may affect other activities of the wheelchair. Damage to the equipment could occur if improperly setup or adjusted.

Operating the Wheelchair

NOTE: Refer to FIGURE 11.1.

Turning the Power On/Off

1. To turn the power On, press the On/Off button.

NOTE: After turning power on, all indicators will light briefly and the display gauge will indicate one of the following:

- A. *THE CURRENT BATTERY CHARGE - Information Gauge shows all LED's lit or partial LED's lit.*
- B. *OUT OF NEUTRAL AT POWER UP - Information Gauge shows all LED's flashing slowly. This occurs when the power is turned on when the joystick is out of neutral. This feature prevents sudden and unexpected movements of the power wheelchair.*

2. Turning the power Off can be achieved by pressing the On/Off button.

Using the Joystick to Drive the Wheelchair

NOTE: For this procedure, refer to FIGURE 11.1.

The joystick is located on the joystick housing and provides smooth control of speed and direction. It is equipped with 360 degrees of mobility for ease of operation. The joystick is spring-loaded, and automatically returns to the upright (neutral) position when released. Pushing the joystick in a given direction causes the wheelchair to move in that direction.

The joystick has proportional drive control, meaning that the further it is pushed from the upright (neutral) position, the faster the wheelchair moves. The maximum speed, however, is limited by the setting of the speed-control knob.

To slow the wheelchair to a stop, simply release the joystick. The wheelchair has automatic speed and direction compensation to minimize corrections.

When first learning to drive, select a slow speed and try to drive the wheelchair as slowly as possible by pushing the joystick slightly forward. This exercise will help you learn to utilize the full potential of the proportional control and allow you to start and stop smoothly.

To drive the wheelchair, perform the following:

1. Adjust speed. Refer to Speed Control Buttons on page 31.
2. Turn the power On. Refer to Turning the Power On/Off on page 29.
3. Maneuver the joystick in the following manner:

MOVEMENT	ACTION
FORWARD	Push joystick forward, towards the front of the wheelchair.
REVERSE	Pull joystick back, towards the rear of the wheelchair.
Turn RIGHT	Move joystick toward the right side of the wheelchair.
Turn LEFT	Move joystick toward the left side of the wheelchair.
STOP	Release the joystick and the wheelchair will slow to a stop.

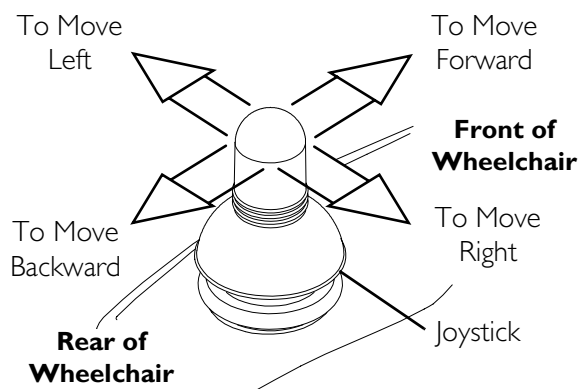


FIGURE 11.1 Using the Joystick to Drive the Wheelchair

Joystick Switches and Indicators

NOTE: For the following information, refer to FIGURE 11.2.

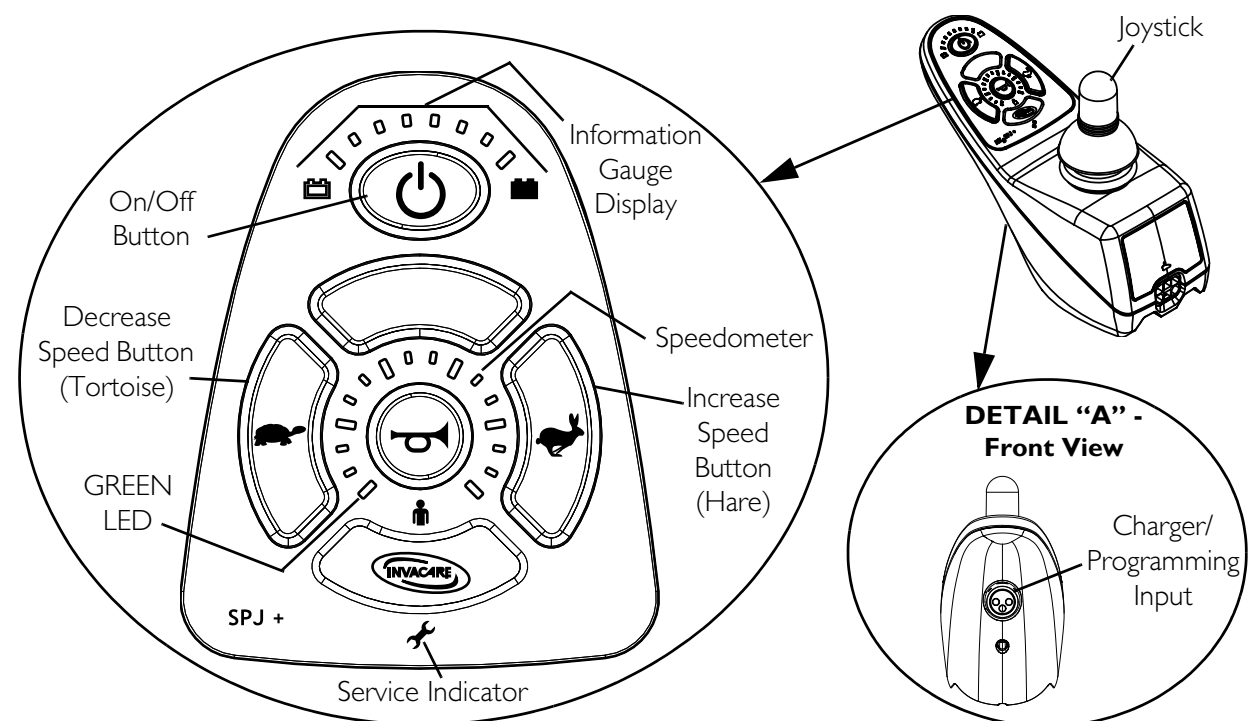


FIGURE 11.2 Joystick Switches and Indicators



On/Off Button









This button is located at the front of the joystick housing. It is used to turn the wheelchair on and off, to remove the joystick from sleep mode (if programmed) and to lock or unlock the joystick (if programmed).

Speedometer

The speedometer is used to show the maximum speed. The right-most LED indicates current maximum speed setting. The bottom left GREEN LED flashes to indicate that the joystick is in speed limit mode. Speed limit mode limits the drive speed to a pre-programmed value, typically when the seat has been elevated and the wheelchair is required to drive at 20% speed.

Speed Control Buttons

The speed control buttons (tortoise button () and hare button () are used to set and adjust the maximum speed.

1. To adjust the speed, perform one of the following:
 - Adjust Speed in 20% Increments (5 Speed Mode) - Press the tortoise button () or hare button () to decrease/increase the speed in 20% increments. The larger bars in the speedometer will light.
 - Adjust Speed in Smaller Increments (VSP Mode) - Perform the following steps:
 - i. Press and hold both the tortoise button () and hare button () until the joystick beeps.
 - ii. Perform one of the following:
 - Press the tortoise button () or hare button () to decrease/increase the speed in 20% increments. The larger bars in the speedometer will light.
 - Press and hold the tortoise button () or hare button () to decrease/increase the speed in smaller increments. The smaller bars in the speedometer will light.

Joystick

The joystick has proportional drive control, meaning that further the joystick is pushed from the upright (neutral) position, the faster the wheelchair or seat moves. Your top speed, however, is limited by the programmed settings.

To slow the wheelchair to a stop, simply release the joystick. The wheelchair has automatic speed and direction compensation to minimize corrections.

Charger/Programming Input

The charger/programming input is located at the front of the joystick housing. This provides easy access for charging the wheelchair batteries. This port also serves as the Remote Programmer Communication connection. Driving is prevented while the system is charging.

Service Indicator

The AMBER service indicator will light when an error or fault occurs. A chart of the diagnostic indications is given in the diagnostic code of the electronics manual supplied with the wheelchair.

Information Gauge Display

Located on the front of the joystick housing, it provides the following information to the user on the status of the wheelchair -

1. Power is on.
2. True state-of-battery-charge, including notification of when the battery requires charging:
 - A. GREEN LEDs are lit, indicating well charged batteries.
 - B. AMBER LEDs are lit, indicating batteries are moderately charged. Recharge batteries before taking a long trip.
 - C. RED LEDs are lit, indicating batteries are running out of charge. Recharge batteries as soon as possible.

The Information Gauge display also serves as a system diagnostic device when a fault is detected by the control module. A specific number of flashes of the LEDs indicate the type of fault detected. Refer to Troubleshooting Guide on page 26 for the diagnostic indications of the wheelchair status.

SECTION 12—ARMS

⚠ WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

Before performing any maintenance, adjustment or service, verify that **ON/OFF** switch on the joystick is in the **OFF** position.

Removing/Installing/Adjusting the Van Seat Arms

Removing/Installing

⚠ WARNING

Increasing the width of the arms may affect the overall width of the wheelchair. Ensure that there is enough clearance when attempting to pass through doorways or other tight spaces, otherwise serious injury or damage may result.

NOTE: For this procedure, refer to FIGURE 12.1 on page 33.

NOTE: Reverse this procedure to install the adjustable width arms.

1. Loosen lock knob that secures the van seat arm to the arm support tube.
2. Remove the van seat arm from the arm support tube.
3. If necessary, repeat STEPS 1-2 to remove the other van seat arm.

Adjusting Width

NOTE: For this procedure, refer to For this procedure, refer to FIGURE 12.1 on page 33.

1. Loosen the two lock knobs that secure the van seat arms to the arm support tube.

NOTE: Both van seat arms should be adjusted to the same distance away from the arm support tube.

NOTE: Changing the width of the van seat arms may also affect the overall width of the wheelchair.

2. Reposition van seat arms until desired width is achieved.
3. Securely tighten the two lock knobs that secure the van seat arms to the arm support tube.

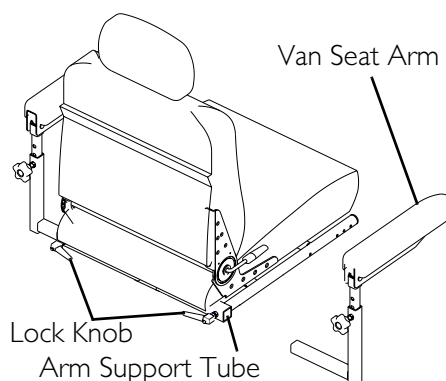


FIGURE 12.1 Removing/Installing - Adjusting Width

Adjusting Angle

⚠ WARNING

Pinch point may occur when adjusting the arm angle position.

NOTE: For this procedure, refer to FIGURE 12.2.

1. Lift-up the armrest.
2. Loosen the jam nut.
3. Adjust the socket screw up or down to the desired arm angle position.
4. Tighten the jam nut.
5. To determine the same angle for the opposite armrest, count the exposed threads after the jam nut has been tightened.
6. Repeat STEPS 1-5 for opposite armrest, if necessary.

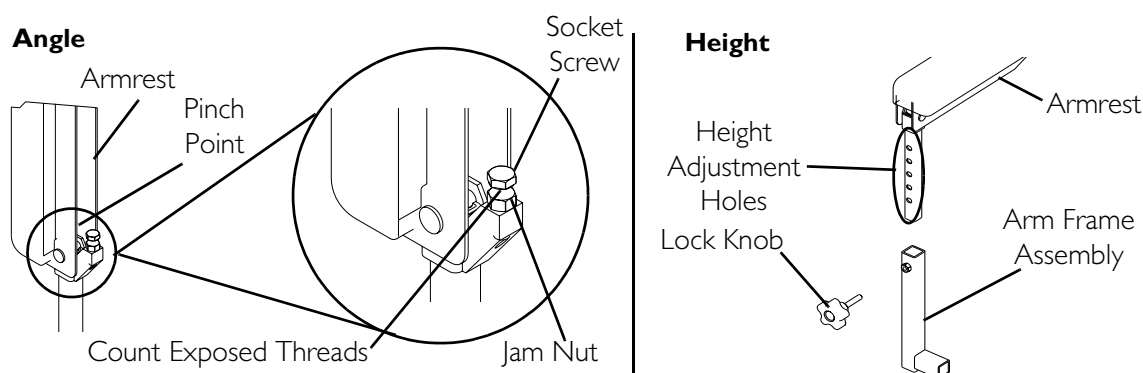


FIGURE 12.2 Adjusting Angle - Adjusting Height

Adjusting Height

NOTE: For this procedure, refer to FIGURE 12.2.

1. Remove the lock knob that secures the armrest to the arm frame assembly.
2. Adjust the armrest to one of five positions.
3. Reinstall the lock knob that secures the armrest to the arm frame assembly and tighten securely.

SECTION I3—SEAT

⚠ WARNING

After ANY adjustments, repair or service and BEFORE use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

Before performing any maintenance, adjustment or service, verify that ON/OFF switch on the joystick is in the OFF position.

Adjusting the Back Angle

NOTE: For this procedure, refer to FIGURE 13.1.

1. Lift up on the release handle and adjust seat to desired angle.
2. Let go of the release handle to lock the back in position.

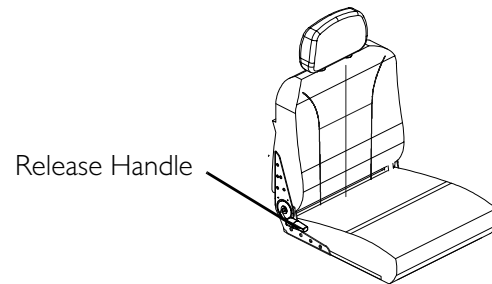


FIGURE 13.1 Adjusting the Back Angle

Adjusting the Headrest

NOTE: For this procedure, refer to FIGURE 13.2.

1. To raise headrest, lift headrest up to desired position.

NOTE: Headrest is locked in position when an audible “click” is heard.

2. To lower headrest, push release tab towards the inside of the wheelchair. Lower headrest to desired position.

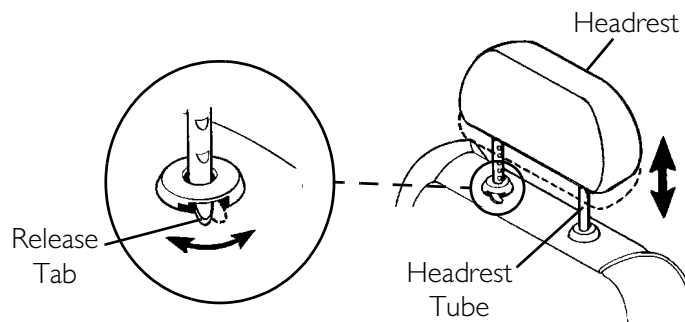


FIGURE 13.2 Adjusting the Headrest

Replacing the Seat Positioning Strap

⚠ WARNING

ALWAYS wear your seat positioning strap. The seat positioning strap is a positioning belt **ONLY**. It is not designed for use as a safety device withstanding high stress loads such as auto or aircraft safety belts. If signs of wear appear, belt must be replaced **IMMEDIATELY**.

NOTE: For this procedure, refer to FIGURE 13.3 on page 36.

1. Remove the two mounting screws and washers that secure the seat positioning straps to the seat frame.
2. Remove the two halves of the seat positioning strap from the rear seat frame.
3. Reposition the two new seat positioning strap halves underneath seat rails.
4. Reinstall the two mounting screws and washers that secure the seat positioning straps to the seat frame. Securely tighten.

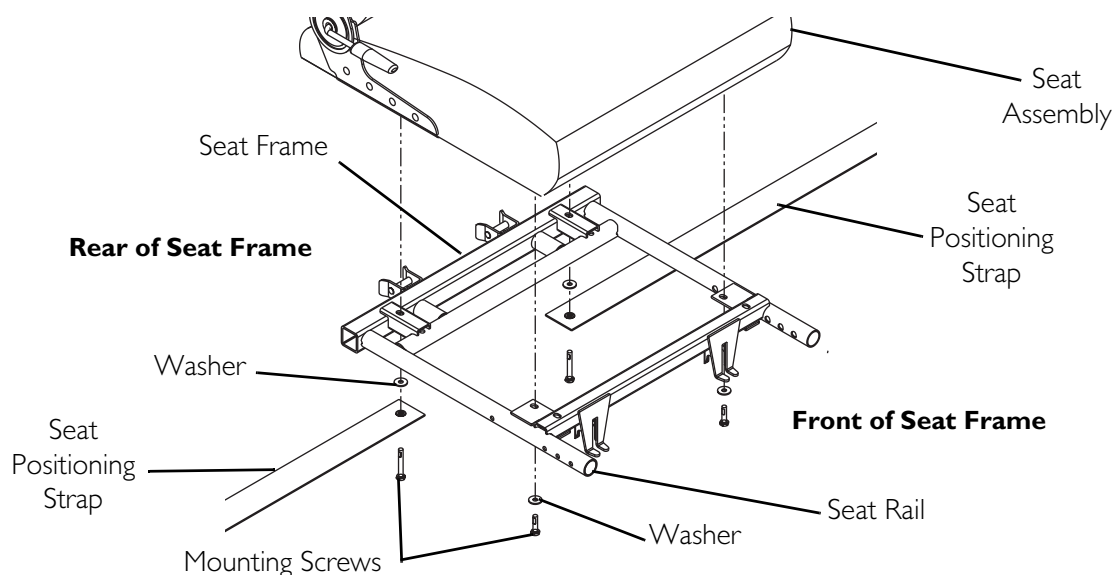


FIGURE 13.3 Replacing the Seat Positioning Strap

Removing/Installing the Seat Assembly

NOTE: For this procedure, refer to FIGURE 13.4.

Removing

1. Disconnect the joystick cable at rear of seat. Refer to Disconnecting/Connecting the Joystick on page 66.
2. Push down on the latch bar underneath front of seat.
3. Rotate seat assembly backward.
4. Slide the seat assembly forward to disengage seat from pivot brackets located in the rear.

Installing

1. Position the seat in the rear pivot brackets as shown in FIGURE 13.4.
2. Rotate seat assembly forward.
3. When seat is lowered, engage seat brackets into seat clevis pins.

⚠ WARNING

When reinstalling the seat verify that the seat brackets are engaged with the seat clevis pins by pulling up on the latch bar.

4. Pull up on latch bar to verify that brackets are engaged with seat clevis pins.

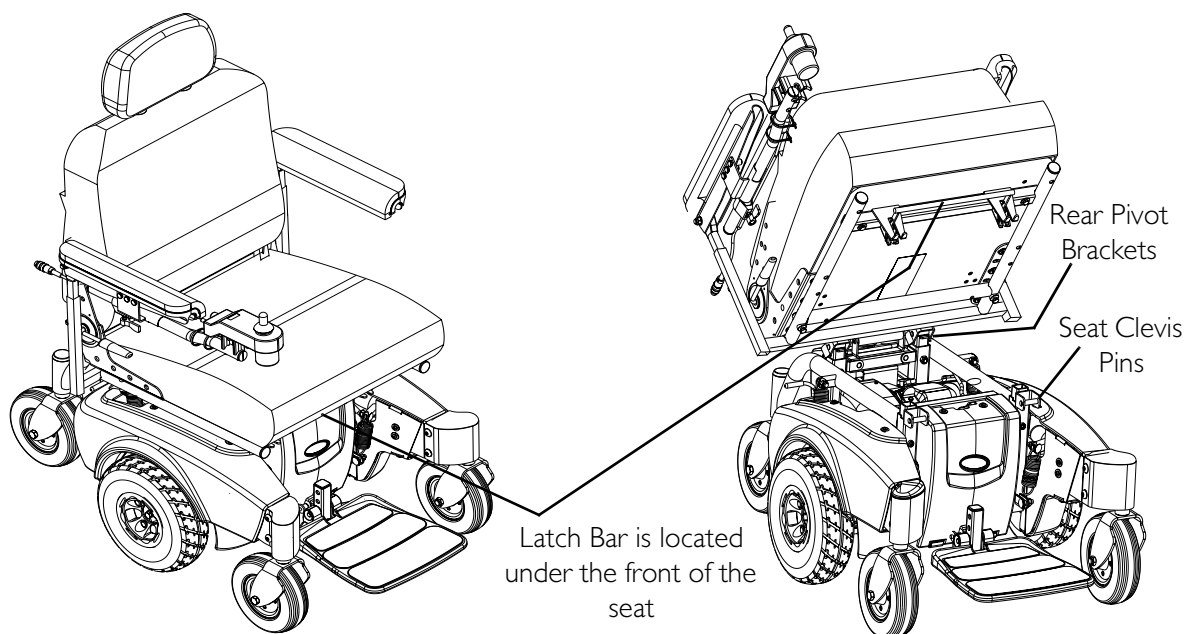


FIGURE 13.4 Removing/Installing the Seat Assembly

Adjusting the Seat Height

⚠ WARNING

For users over 250 lbs, the seat **MUST be mounted in the furthest rear position and the front seat posts **MUST** be in the 1-inch raised position or lower mounting holes **A** or **B**.**

DO NOT adjust the rear seat posts higher than the front seat posts.

NOTE: For this procedure, refer to FIGURE 13.5 and FIGURE 13.6.

NOTE: The seat can be adjusted to five height positions in 1/2-inch increments.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 37.
2. Remove the mounting screw and locknut that secures the adjustable height tube to the support tube.
3. Adjust tube to desired mounting position. Refer to the chart on the following page for available mounting positions.
4. Reinstall mounting screw and locknut. Securely tighten.
5. Repeat STEPS 2-4 for the three remaining adjustable height tubes.
6. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 37.

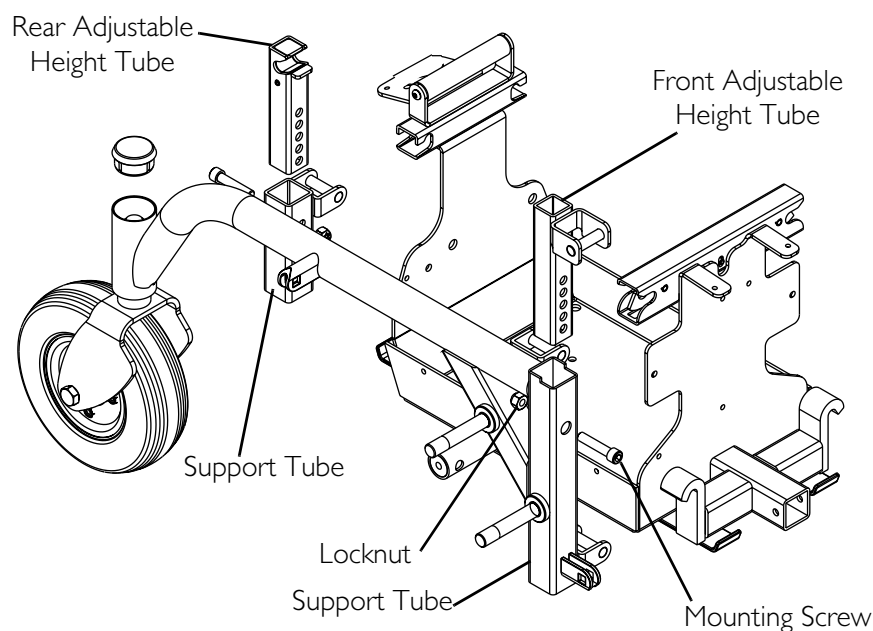


FIGURE 13.5 Adjusting the Seat Height

WHEELCHAIR IS EQUIPPED WITH	AVAILABLE MOUNTING HOLES FOR FRONT ADJUSTABLE HEIGHT TUBE				
	A	B	C	D	E
VAN SEAT WITH FOOTBOARD					
REAR ADJUSTABLE HEIGHT TUBE					
Mounted in hole A	Y	Y	Y	Y	Y
Mounted in hole B	N*	Y	Y	Y	Y
Mounted in hole C	N*	N*	Y	Y	Y
Mounted in hole D	N*	N*	N*	Y	Y
Mounted in hole E	N*	N*	N*	N*	Y
VAN SEAT WITH FRONT RIGGINGS					
REAR ADJUSTABLE HEIGHT TUBE					
Mounted in hole A	Y	Y	Y	Y	Y
Mounted in hole B	N*	Y	Y	Y	Y
Mounted in hole C	N*	N*	Y	Y	Y
Mounted in hole D	N*	N*	N*	Y	Y
Mounted in hole E	N*	N*	N*	N*	Y
<p><i>*NOTE: This mounting hole combination would result in a forward seat dump. Forward seat dump is where the rear of the seat is higher than the front of the seat. The seat should never be adjusted to a position that results in a forward seat dump.</i></p>					

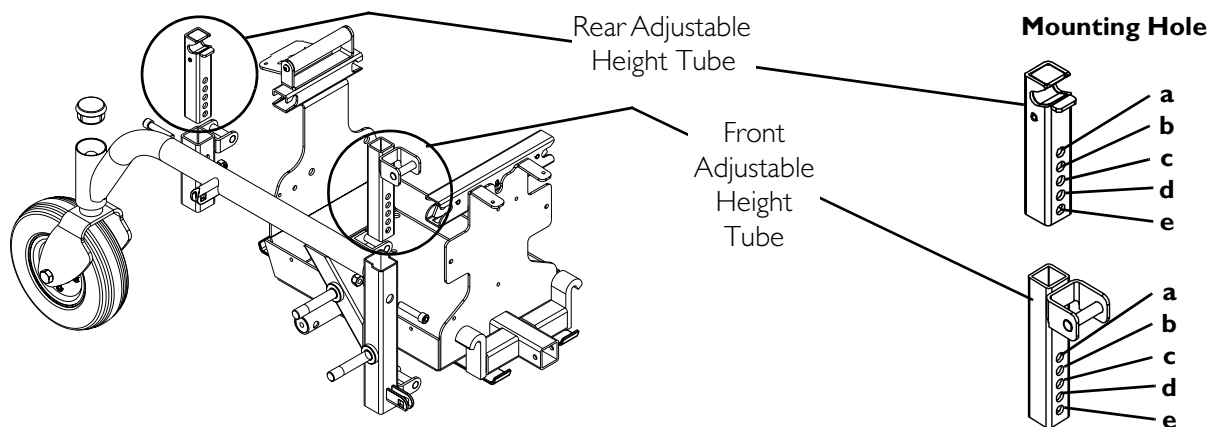


FIGURE 13.6 Adjusting the Seat Height

Adjusting the Seat Position on the Seat Frame

⚠ WARNING

For users over 250 lbs: the seat **MUST be mounted in the furthest rearward position and the front seat posts **MUST** be in the 1-inch raised position or lower mounting holes **A** or **B**. Refer to **Adjusting Seat Height** in this section of the manual.**

DO NOT adjust the rear seat posts higher than the front seat posts.

NOTE: For this procedure, refer to FIGURE 13.7 and FIGURE 13.8 on page 41.

1. Remove the seat assembly. Refer to Removing/Installing the Seat Assembly on page 37.
2. Remove the four bolts, four coved washers and two spacers securing the seat assembly to the seat frame (FIGURE 13.7).
3. Separate seat assembly from the seat frame.
4. Refer to FIGURE 13.8 to determine the correct mounting holes to achieve the desired seat position.

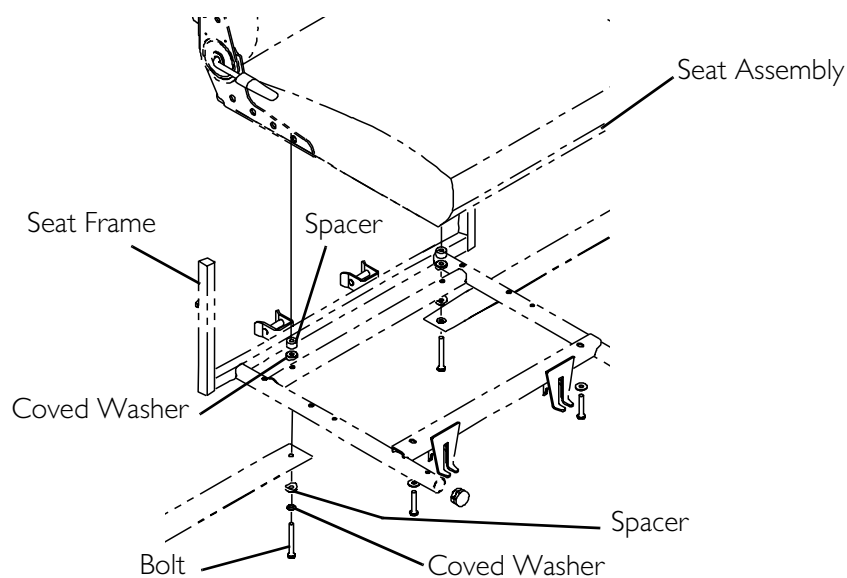
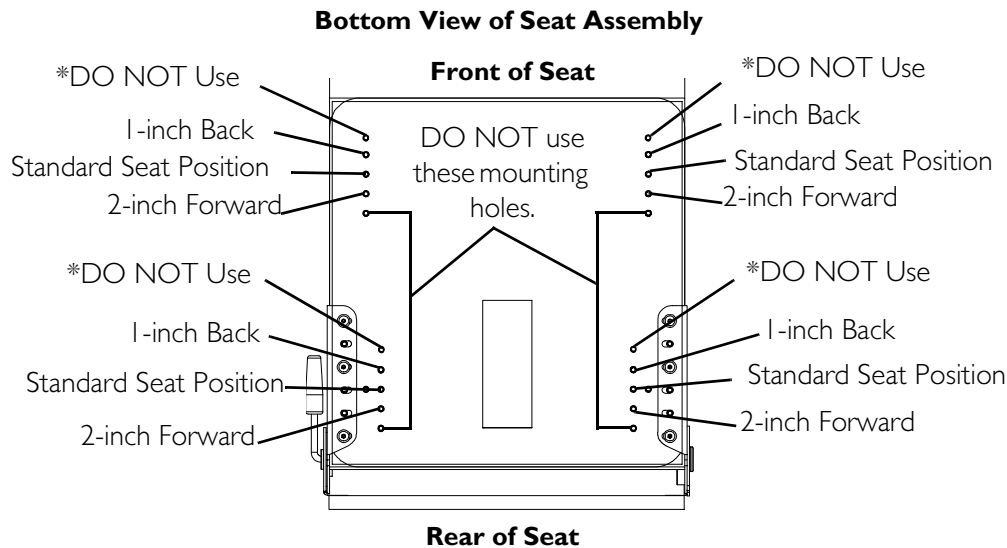


FIGURE 13.7 Adjusting the Seat Position on the Seat Frame

5. Align the seat assembly mounting holes determined in STEP 4 with the seat frame mounting holes determined in STEP 4 (FIGURE 13.8).
6. Secure the seat assembly to the seat frame using the four bolts, four coved washers and two spacers securing the seat assembly to the seat frame (FIGURE 13.7). Securely tighten.
7. Reinstall the seat assembly. Refer to Removing/Installing the Seat Assembly on page 37.



**NOTE: These mounting holes are used on 20" wide solid base seat only.*

FIGURE 13.8 Adjusting the Seat Position on the Seat Frame

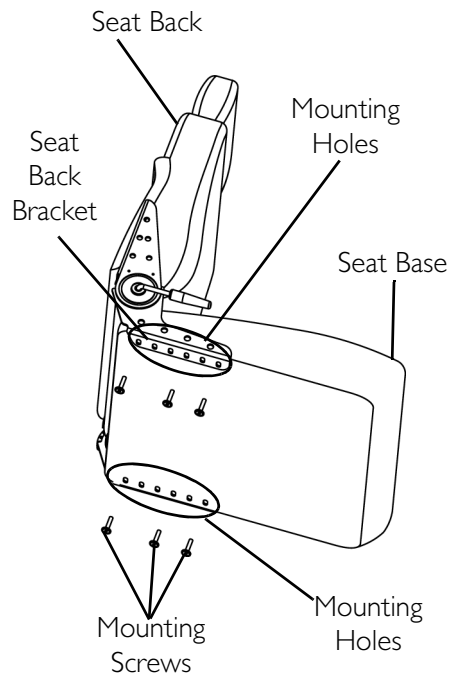
Adjusting Seat Depth

NOTE: For this procedure, refer to FIGURE 13.9 on page 42.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 37.
2. Remove the seat base from the seat assembly. Refer to Adjusting the Seat Position on the Seat Frame on page 40.
3. Remove the six mounting screws located under the seat that secure the seat back assembly in place.
4. Adjust seat back assembly to desired position and reinstall the six mounting screws. Securely tighten.

NOTE: Refer to Detail "A" of FIGURE 13.9 for proper seat depth positions. For example, to achieve maximum seat depth, the front mounting hole on the seat back bracket aligns with the third hole on the seat base.

5. Reinstall the seat base onto the seat assembly. Refer to Adjusting the Seat Position on the Seat Frame on page 40.
6. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 37.

**DETAIL "A" - SEAT DEPTH POSITIONS**

NOTE: Seat depth maximum is at the third seat hole.

Minimum Seat Depth

Seat Depth	Seat Size
16 inch	16 X 18 inch
16 inch	18 X 18 inch
18 inch	20 X 20 inch
18 inch	22 X 20 inch

Middle Seat Depth

Seat Depth	Seat Size
17 inch	16 X 18 inch
17 inch	18 X 18 inch
19 inch	20 X 20 inch
19 inch	22 X 20 inch

Maximum Seat Depth

Seat Depth	Seat Size
18 inch	16 X 18 inch
18 inch	18 X 18 inch
20 inch	20 X 20 inch
20 inch	22 X 20 inch

FIGURE 13.9 Adjusting Seat Depth

SECTION 14—FOOTBOARD ASSEMBLY

WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

Before performing any maintenance, adjustment or service, verify that **ON/OFF** switch on the joystick is in the **OFF** position.

DO NOT stand on the flip-up footboard. When getting in or out of the wheelchair, make sure that the flip-up footboard is in the upward position.

LIMITED CLEARANCE BETWEEN FOOTBOARD AND CASTER - The user's feet **MUST** remain on the footboard while operating the wheelchair. If the user's feet are allowed to rest off the side of the footboard they may come in contact with the caster possibly resulting in injury.

Removing/Installing the Footboard Assembly

NOTE: For this procedure, refer to FIGURE 14.1 on page 44.

Removing

1. Remove the quick release pin that secures the footboard assembly to the wheelchair frame by depressing the button while sliding the pin out.
2. Remove the footboard assembly from the wheelchair frame.

Installing

WARNING

Pinch point may occur when rotating the footboard assembly.

Make sure the detent balls of the quick release pin are fully released and protruding past the outer edge of the tube before operating the wheelchair. Otherwise, injury and/or damage may result.

Keep detent balls clean.

1. Position the footboard assembly onto the wheelchair frame so that the mounting holes in the wheelchair frame align with the desired mounting holes in the footboard assembly.
2. Install the quick release pin by depressing the button while sliding the pin in. Make sure the detent balls are fully released and protruding past the outer edge of the tube.

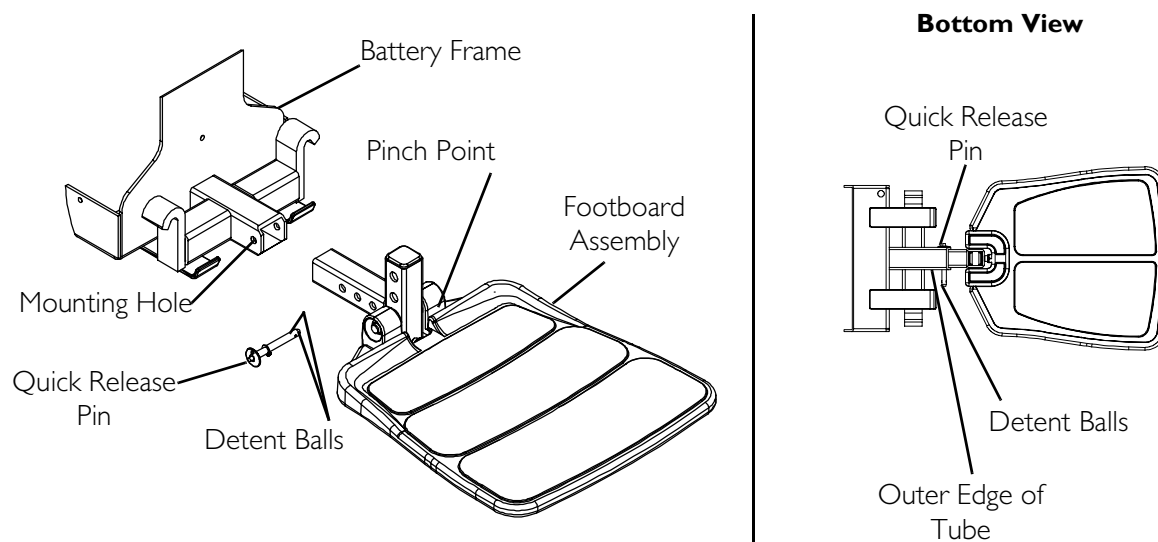


FIGURE 14.1 Removing/Installing the Footboard Assembly

Adjusting the Footboard Assembly

Angle Adjustment

NOTE: For this procedure, refer to FIGURE 14.2.

1. Loosen the jam nut and set screw located underneath on the rear of the footplate.
2. Adjust the mounting screw in or out to obtain the desired footboard assembly angle.
3. Thread the jam nut and washer inward until it is flush with the footboard bracket.
4. Securely tighten the jam nut and washer to secure the mounting screw in place.

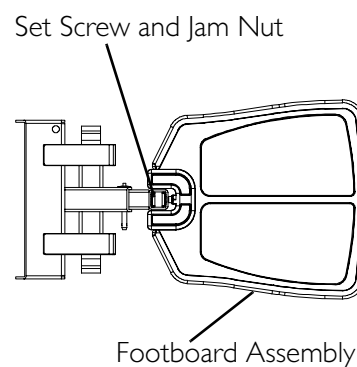


FIGURE 14.2 Angle Adjustment

Depth Adjustment

NOTE: For this procedure, refer to FIGURE 14.3.

1. Remove the quick release pin that secures the footboard assembly to the wheelchair frame.

⚠ WARNING

Make sure the detent balls of the quick release pin are fully released and protruding past the outer edge of the tube before operating the wheelchair. Otherwise, injury and/or damage may result.

Keep detent balls clean.

2. Adjust footboard to one of three mounting positions.
3. Install the quick release pin. Make sure the detent balls are fully released and protruding past the outer edge of the tube.

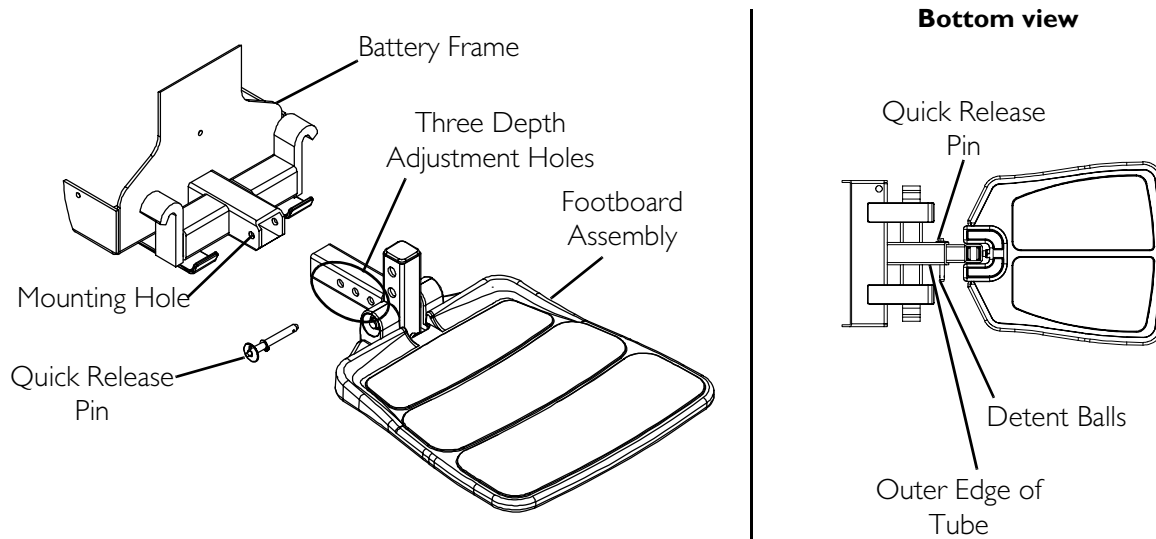


FIGURE 14.3 Depth Adjustment

SECTION 15—FRONT RIGGINGS

⚠ WARNING

After ANY adjustments, repair or service and BEFORE use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

While the wheelchair is moving, minimum ground clearance for the front rigging is three inches. If the wheelchair is not moving, the front rigging **MUST maintain a minimum of one inch ground clearance - otherwise personal injury and damage may result.**

Before performing any maintenance, adjustment or service, verify that ON/OFF switch on the joystick is in the OFF position.

Installing/Removing Front Riggings

NOTE: For this procedure, refer to FIGURE 15.1.

CAUTION

If front riggings are used, then the seat **MUST be adjusted to the highest mounting position - otherwise damage may occur.**

Installing

1. If necessary, remove the footboard. Refer to Removing/Installing the Footboard Assembly on page 43.
2. Turn front rigging to the side (open footplate is perpendicular to wheelchair) and position mounting holes in the front rigging hinge plates with hinge pins on the wheelchair frame.
3. Install the front rigging hinge plates onto the hinge pins on the wheelchair frame.
4. Push the front rigging towards the inside of the wheelchair until it locks into place.

NOTE: The footplate will be on the inside of the wheelchair when locked in place.

5. Repeat STEPS 1-4 for opposite side of wheelchair.

Removing

1. Push the front rigging release lever inward and rotate the footrest outward.
2. Lift up on front rigging and remove from the wheelchair.
3. Repeat STEPS 1-2 for opposite side of wheelchair.

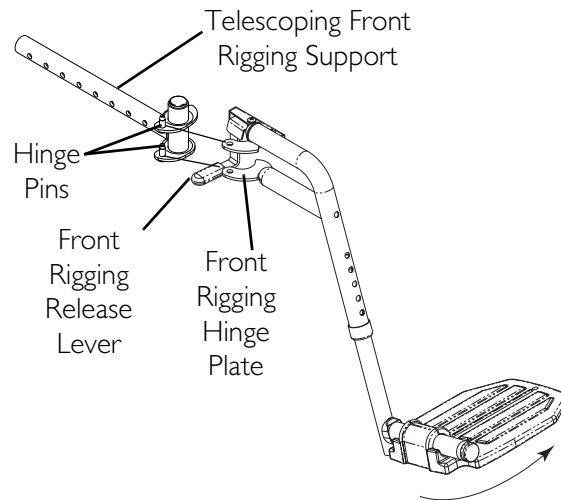


FIGURE 15.1 Installing/Removing Front Riggings

Adjusting Footrest Height

on PHWH93 Front Riggings

NOTE: For this procedure, refer to FIGURE 15.2.

1. Remove any accessory from the footrest(s).
2. Remove the footrest from the wheelchair. Refer to Installing/Removing Front Riggings on page 46.

NOTE: Lay footrest on a flat surface to make hardware more accessible.

3. Remove the hex bolt, coved washers and locknut that secure the lower footrest to the footrest support.
4. Reposition the lower footrest to the desired height.
5. Reinstall hex bolt, coved washers and locknut that secure lower footrest to footrest support. Tighten securely.
6. Repeat STEPS 1-5 for the opposite side of the wheelchair footrest, if necessary.
7. Reinstall the footrest(s) onto the wheelchair. Refer to Installing/Removing Front Riggings on page 46.
8. Reinstall any accessory onto the footrest(s).

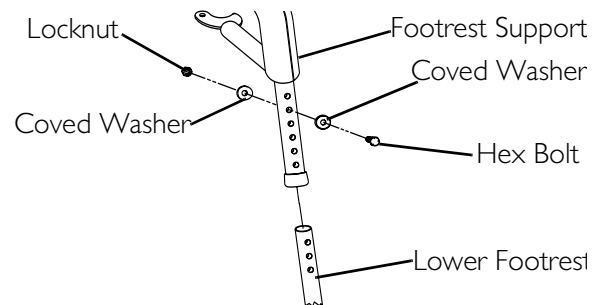
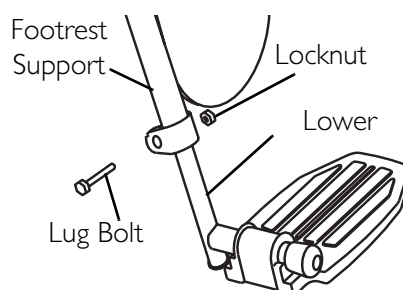


FIGURE 15.2 Adjusting Footrest Height - on Phwh93 Front Riggings

on PH904A and PHAL4A Front Riggings

NOTE: For this procedure, refer to For this procedure, refer to FIGURE 15.3.

1. Loosen, but do not remove, the lug bolt and locknut that secure the lower footrest to the footrest support.
2. Reposition the lower footrest to the desired height.
3. Securely tighten the lug bolt and locknut that secure the lower footrest to the footrest support.
4. Repeat STEPS 1-3 for the opposite side of the wheelchair footrest, if necessary.



NOTE: PH904A style front rigging shown. PHAL4A front rigging adjust the same way.

FIGURE 15.3 Adjusting Footrest Height - on Ph904a and Phal4a Front Riggings

Replacing Heel Loops

NOTE: For this procedure, refer to FIGURE 15.4.

1. Note the position of hex bolt, coved washers and locknut for reinstallation.
2. Remove the hex bolt, coved washers and locknut that secure the lower footrest to the footrest support.
3. Remove the lower footrest.
4. Remove the phillips bolt, spacer and locknut that secure the existing heel loop to the lower footrest.
5. Slide the existing heel loop off the lower footrest.
6. Replace heel loop.
7. Reverse STEPS 1-6 to reassemble.

NOTE: When securing heel loop to lower footrest, tighten the phillips screw and locknut until the spacer is secure.

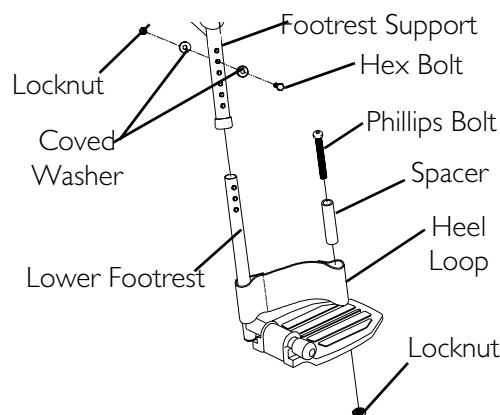


FIGURE 15.4 Replacing Heel Loops

Raising/Lowering Elevating Front Riggings

NOTE: For this procedure, refer to FIGURE 15.5.

1. Perform one of the following:
 - **RAISING** - Pull back on the release lever and raise front rigging to the desired height.
 - **LOWERING** - Support front rigging with one hand away from the release lever. Push release lever downward with other hand.

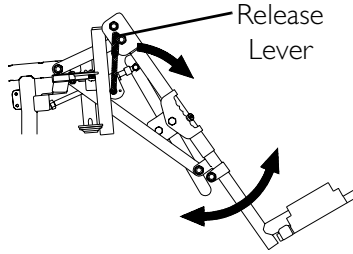


FIGURE 15.5 Raising/Lowering Elevating Front Riggings

Adjusting/Replacing Telescoping Front Rigging Supports

NOTE: For this procedure, refer to FIGURE 15.6.

NOTE: When adjusting the telescoping front rigging support depth, ensure the footplate does not interfere with the caster wheel rotation.

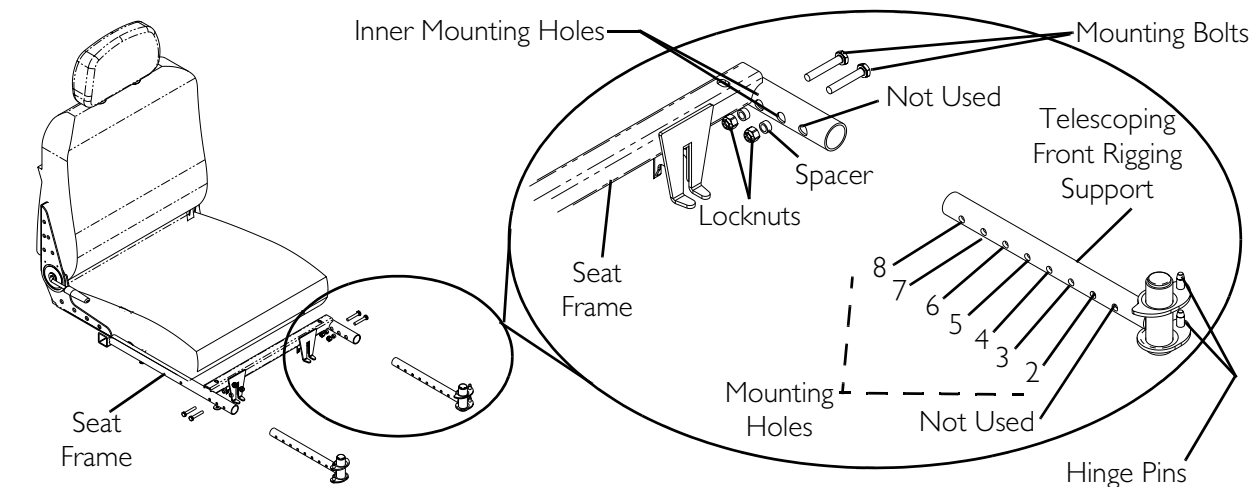
NOTE: Telescoping front rigging supports may be extended up to 2-inches from the wheelchair frame in 1-inch increments. This adjustment does not affect seat depth.

NOTE: When installing the front rigging support tubes, ensure that the hinge pins are on the outside of the wheelchair facing away from the seat frame.

1. Remove the two socket bolts and locknuts that secure telescoping front rigging support to the seat frame.
2. Perform one of the following:
 - A. **Adjusting** - Align the appropriate mounting hole of the telescoping front rigging support with the front mounting hole in the seat frame tubes to achieve the desired depth as shown in FIGURE 15.6.
 - B. **Replacing** - Perform the following steps:
 - i. Remove the existing telescoping front rigging support from the wheelchair frame.
 - ii. Insert the new telescoping front rigging support into the seat frame.
 - iii. Align the appropriate mounting hole of the telescoping front rigging support with the front mounting hole in the seat frame tubes to achieve the desired depth as shown in FIGURE 15.6.

NOTE: The footplate will be on the inside of the wheelchair when locked in place.

3. Using the two socket bolts and locknuts, secure the telescoping front rigging support to the seat frame as shown in FIGURE 15.6.
4. If necessary, repeat STEPS 2-4 on remaining telescoping front rigging support.



STANDARD POSITION		1-INCH OUT		2-INCHES OUT	
18-inch Wide	20-inch Wide	18-inch Wide	20-inch Wide	18-inch Wide	20-inch Wide
Holes 2 and 3	Holes 4 and 5	Holes 3 and 4	Holes 5 and 6	Holes 4 and 5	Holes 6 and 7

FIGURE 15.6 Adjusting/Replacing Telescoping Front Rigging Supports

SECTION 16—SHROUD/WHEELS

WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

Before performing any maintenance, adjustment or service, verify that **ON/OFF** switch on the joystick is in the **OFF** position.

Replacing the Foam Filled or Pneumatic Tires onto the Wheel Rim

WARNING

DO NOT attempt to replace foam filled or pneumatic tires. This procedure **MUST** be performed by a qualified technician.

NOTE: During initial use of the wheelchair, the user may experience flat spots on the wheels. Flat spots will vanish with continued use of the wheelchair.

Removing/Installing the Shrouds

NOTE: For this procedure, refer to FIGURE 16.1 on page 52.

Removing

1. Disconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 66.
2. Remove the seat assembly. Refer to Removing/Installing the Seat Assembly on page 37.
3. Perform one of the following:
 - A. Right and Left Side Shroud - Remove the five mounting screws that secure each shroud to the base frame.

NOTE: The shorter mounting screws are used to secure the top rear of side shrouds. Refer to DETAIL "A" in FIGURE 16.1.

- B. Front Shroud - Remove the two mounting screws that secure the front shroud to the base frame. Refer to DETAIL "B" in FIGURE 16.1.
 - C. Rear Shroud - Remove the two mounting screws that secure the rear shroud to the base frame. Refer to DETAIL "B" in FIGURE 16.1.
4. Lift the shrouds off of the wheelchair frame.

Installing

CAUTION

To prevent cracking the plastic shroud material, **DO NOT** overtighten the mounting screws.

1. Perform one of the following:
 - A. Right and Left Side Shroud - Secure each side shroud to the base frame with the five mounting screws.
 - NOTE: The shorter mounting screws are used to secure the top rear of side shrouds. Refer to DETAIL "A" in FIGURE 16.1.*
 - B. Front Shroud - Secure the front shroud to the base frame with two mounting screws. Refer to DETAIL "B" in FIGURE 16.1.
 - C. Rear Shroud - Secure the rear shroud to the base frame with two mounting screws. Refer to DETAIL "B" in FIGURE 16.1.
2. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 37.
 3. Reconnect the joystick. Refer to Disconnecting/Connecting the Joystick on page 66.

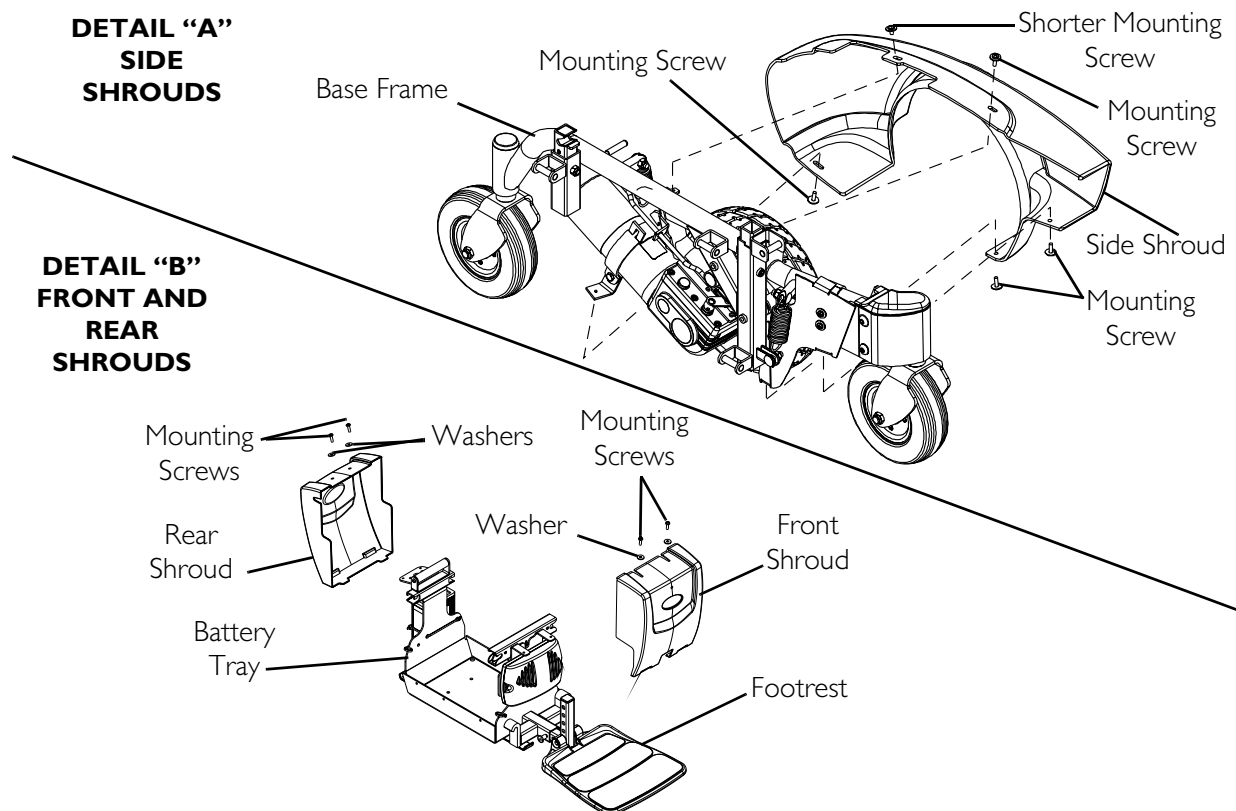


FIGURE 16.1 Removing/Installing the Shrouds

Engaging/Disengaging Motor Release Lever

NOTE: For this procedure, refer to FIGURE 16.2.

⚠ WARNING

DO NOT engage or disengage the motor release lever until the **ON/OFF** switch on the joystick is in the **OFF** position.

CAUTION

Ensure both motor release levers are fully engaged BEFORE driving the wheelchair.

*NOTE: The motor lock disengagement/engagement allows free-wheeling or joystick controlled operation. Free-wheeling allows an attendant to maneuver the wheelchair **WITHOUT** power.*

1. Locate the motor lock handles on the motors protruding through the shrouds by the rear springs.
2. Perform one of the following:
 - To disengage the Motor Release Levers - Grasp the motor release lever connected to the motors and pull out and away from the wheelchair. If necessary rock the wheelchair gently while pulling on the motor lock handle.

NOTE: This allows the wheelchair to free-wheel for pushing if necessary.

- To engage the Motor Release Levers - Grasp the motor release lever connected to the motors and push towards and into the wheelchair. Rock the wheelchair gently if necessary.

NOTE: This allows the motors to drive the wheels.

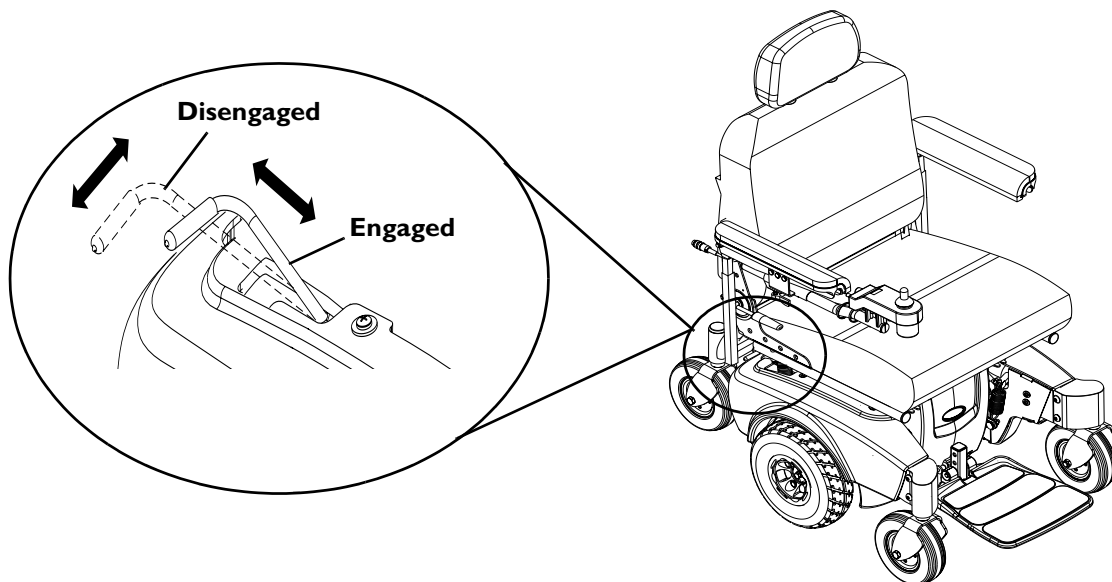


FIGURE 16.2 Engaging/Disengaging Motor Release Lever

Replacing the Front/Rear Caster Assemblies

NOTE: For this procedure, refer to FIGURE 16.3.

NOTE: Front and rear caster assemblies are replaced in the same manner.

NOTE: When replacing the front/rear caster assemblies, it is necessary to brace the caster assemblies to prevent the wheel from spinning.

1. Remove the mounting screw, two washers and locknut that secures the caster to the fork.
2. Remove the caster and discard.
3. Secure new caster to fork with existing mounting screw, two washers and locknut. Securely tighten.

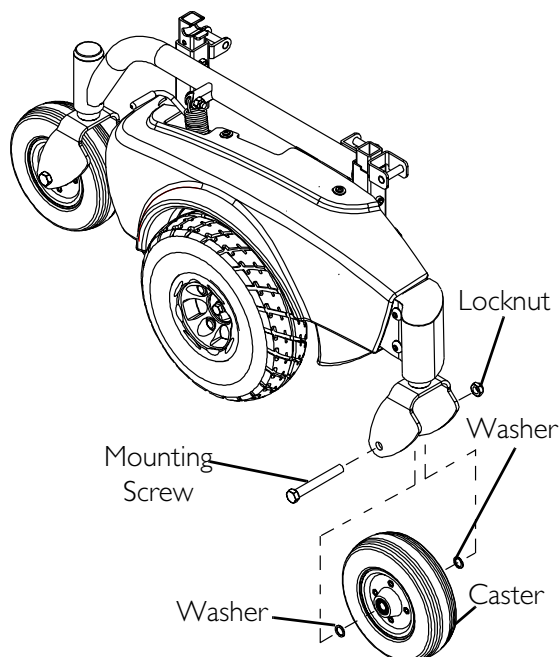


FIGURE 16.3 Replacing the Front/Rear Caster Assemblies

Adjusting Forks

NOTE: For this procedure, refer to FIGURE 16.4.

1. Remove the dust cover.
2. To properly tighten caster journal system and guard against flutter, perform the following check:
 - A. Tip back the wheelchair.
 - B. Pivot both forks and casters to top of their arc simultaneously.
 - C. Let casters drop to bottom of arc (wheels should swing once to one-side, then immediately rest in a straight downward position).
 - D. Adjust locknuts according to freedom of caster swing.
3. Test wheelchair for maneuverability.
4. Readjust locknuts if necessary, and repeat STEPS 1-3 until correct.
5. Snap dust cover into the caster headtube ensuring that the tabs are under the plastic side shrouds.

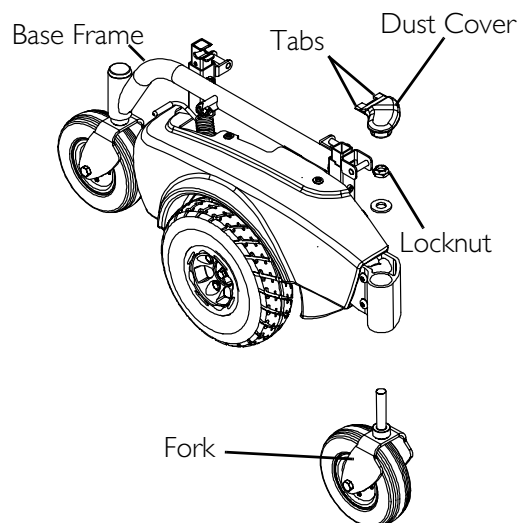


FIGURE 16.4 Adjusting Forks

SECTION 17—BATTERIES

Warnings For Handling and Replacing Batteries

WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

Make sure power to the wheelchair is **OFF** before performing this section.

The use of rubber gloves is recommended when working with batteries.

Invacare strongly recommends that battery installation and battery replacement **ALWAYS** be done by a qualified technician.

UI batteries weight 18 pounds each. Use proper lifting techniques (lift with your legs) to avoid injury.

Use UI batteries only. Failure to use the correct battery size and/or voltage may cause damage to your wheelchair and give you unsatisfactory performance.

ALWAYS use a battery lifting strap when lifting a battery. It is the most convenient method and assures that the battery acid will not spill. It also helps to prolong the life of the battery.

DO NOT tip the batteries. Keep the batteries in an upright position.

NEVER allow any of your tools and/or battery cables to contact **BOTH** battery posts at the same time. An electrical short may occur and serious personal injury or damage may occur.

The **POSITIVE (+) RED** battery cable must connect to the **POSITIVE (+)** battery terminal, otherwise serious damage will occur to the electrical system.

NOTE: If there is battery acid in the bottom of the battery tray or on the sides of the batteries, apply baking soda to these areas to neutralize the battery acid. Before reinstalling the existing or new batteries, clean the baking soda from the battery tray or batteries being sure to avoid contact with skin and eyes. Determine source of contamination. Never install/reinstall a battery with a cracked or otherwise damaged case.

Using the Proper Batteries

NOTE: Refer to FIGURE 17.1.

1. Place battery on ground/flat surface.
2. Visually draw a horizontal and vertical centerline through the middle of battery (FIGURE 17.1).
3. Position the battery so that the terminals are above the horizontal centerline.
4. Visually inspect the battery to ensure the correct position of the **POSITIVE** and **NEGATIVE** terminals (FIGURE 17.1):

⚠ WARNING

Batteries with terminal configuration as shown below **MUST** be used. Batteries that have the reverse terminal configuration **MUST** not be used - otherwise injury and damage may occur.

Terminals **MUST** have a cross hole in them as shown below

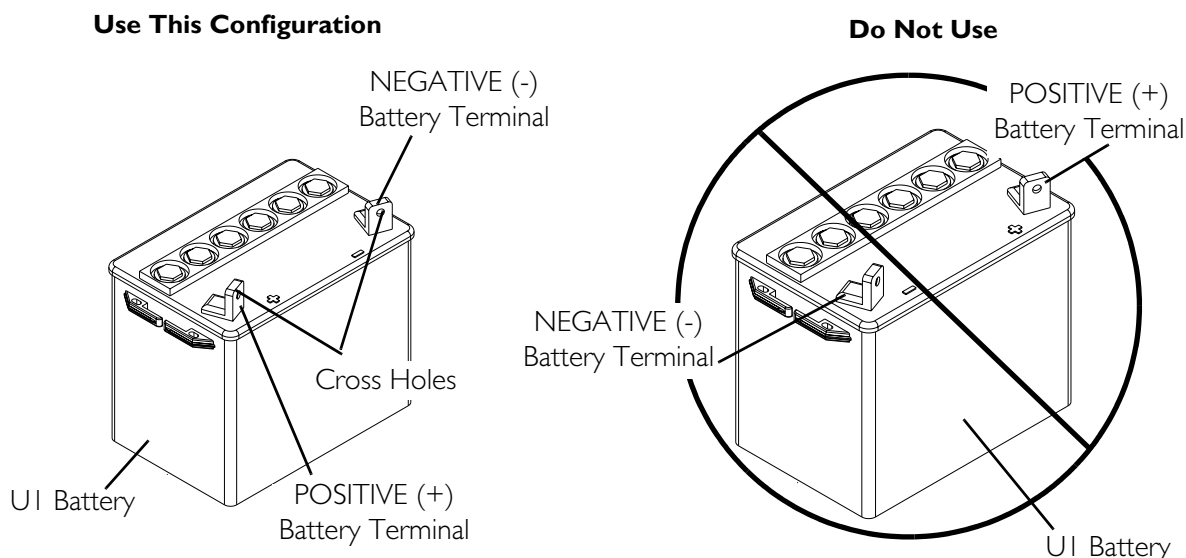


FIGURE 17.1 Using the Proper Batteries

Removing/Installing Batteries from/into Battery Tray

⚠ WARNING

Always use the battery handle or lifting strap when lifting the battery. It is the most convenient method and assures that the battery acid will not spill. It also helps to prolong the life of the battery.

DO NOT tip the batteries. Keep the batteries in an upright position.

NOTE: For this procedure, refer to FIGURE 17.2 on page 58.

NOTE: Have the following tools available:

TOOL	QTY	COMMENTS
7/16-INCH (6PT) BOX WRENCH	1	Not Supplied
DIAGONAL CUTTERS	1	Not Supplied

NOTE: If there is battery acid in the bottom of the battery tray or on the sides of the batteries, apply baking soda to these areas to neutralize the battery acid. Before reinstalling the existing or new batteries, clean the baking soda from the battery tray or batteries being sure to avoid contact with skin and eyes. Determine source of contamination. Never install/reinstall a battery with a cracked or otherwise damaged case.

Removing

1. Place the wheelchair in a well ventilated area where work can be performed without risking damage to carpeting or floor covering.
2. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 49.
3. Verify the joystick On/Off switch is in the Off position and disconnect joystick cable (not shown). Refer to Disconnecting/Connecting the Joystick on page 66.
4. Disconnect the front battery from the controller (BLACK connector on the standard M71).
5. Disconnect the rear battery from the front battery (GREY connector).
6. Lift the rear battery out of the battery tray using the battery handle or lifting strap.
7. Slide front battery back and lift out of battery tray using the battery handle or lifting strap.

Installing

1. Verify the joystick On/Off switch is in the Off position and disconnect joystick cable (not shown). Refer to Disconnecting/Connecting the Joystick on page 66.
2. Position front battery in rear of battery tray and slide forward into position (FIGURE 17.2).
3. Position rear battery in rear of battery tray (FIGURE 17.2).
4. Connect the rear battery to the front battery (GREY connector).
5. Connect the front battery to the controller (BLACK connector on the standard M71).
6. Reinstall the seat. Refer to Removing/Installing the Seat Assembly on page 49.
7. Connect joystick cable (not shown). Refer to Disconnecting/Connecting the Joystick on page 66.

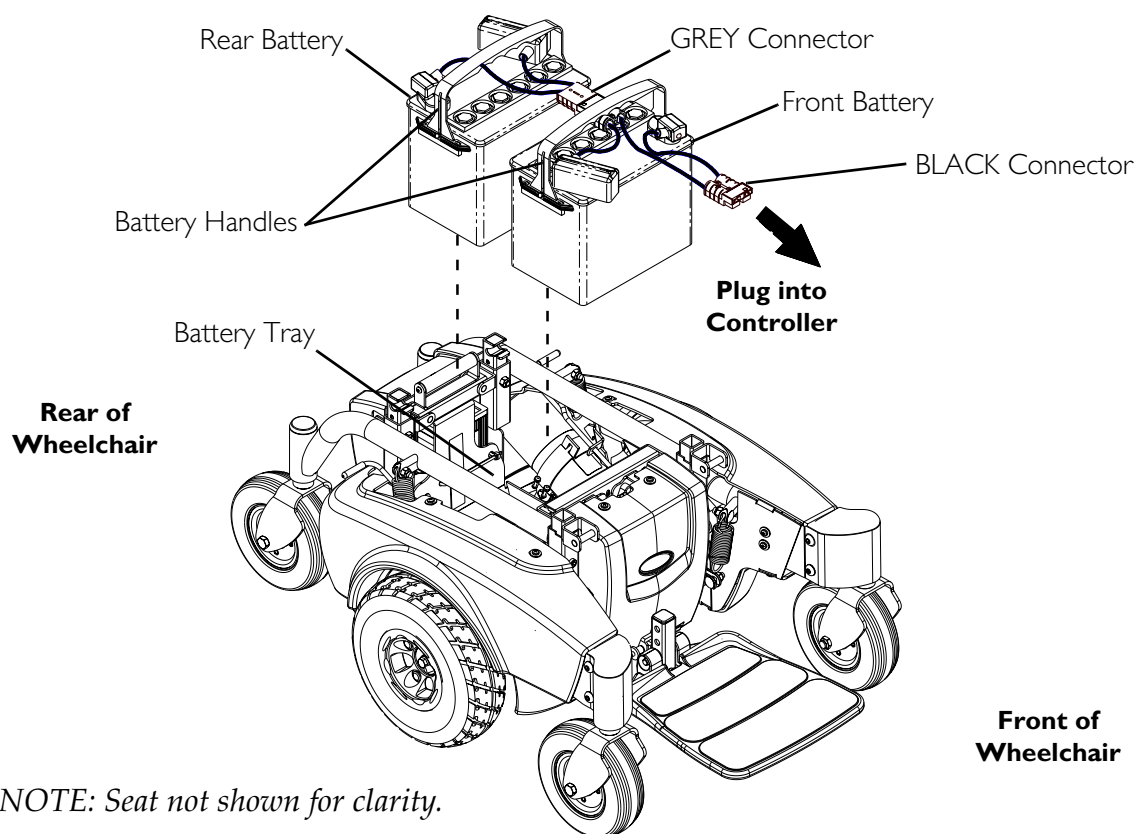


FIGURE 17.2 Removing/Installing Batteries from/into Battery Tray

Connecting/Disconnecting Battery Cables

NOTE: For this procedure, refer to FIGURE 17.4 on page 63.

Connecting Battery Cables

⚠ WARNING

NEVER allow any of your tools and/or battery cables to contact **BOTH** battery terminals at the same time. An electrical short may occur and serious personal injury or damage may occur.

The use of rubber gloves is recommended when working with batteries.

Battery terminal configuration as shown in **FIGURE 17.3, DETAIL “A”**, **MUST** be used. Batteries that have the terminal configuration reversed **MUST NOT** be used - otherwise serious injury or damage may occur.

DO NOT remove fuse or mounting hardware from **POSITIVE (+) RED** battery cable/mounting screw.

All battery terminal covers (two on the front battery and two on the rear battery) **MUST** be installed prior to use.

DO NOT route wires under the battery lifting strap.

CAUTION

When connecting the battery cables to the batteries, the battery cables **MUST be connected to the battery terminals as shown in **FIGURE 17.3, DETAIL “B”**, (depending on battery type), otherwise damage to the battery cable may result when installing battery terminal caps.**

1. If the batteries being installed do not have built-in handles, perform the following steps:
 - A. Unfasten the hook and loop strips on the wide part of the battery lifting strap.
 - B. Place the wide part of the lifting strap around the middle of the battery with the hook and loop strips on top, as shown in **FIGURE 17.3**.
 - C. Pull the wide strap ends tightly around the battery and fasten them together.
 - D. Position the strap as close to the middle of the battery as possible so that it does not tip when lifted by the handle.
 - E. Repeat STEPS A-D for the remaining battery.
2. Secure the battery cables to the battery terminals as described below. Securely tighten. Refer to Detail “A” of **FIGURE 17.3**:
 - A. Secure **NEGATIVE (-) BLACK** battery cable to **NEGATIVE (-)** battery terminal using the mounting screw and the locknut.
 - B. Connect **POSITIVE (+) RED** battery cable to **POSITIVE (+)** battery terminal using the mounting screw with fuse and the locknut.
3. Verify all battery cables/ring terminals are correctly installed and securely tightened.
4. Slide terminal cap(s) down battery cables and onto battery clamps (Detail “B” of **FIGURE 17.3**).
5. Secure each terminal cap in place with a tie-wrap [use tie-wraps 11-1/2-inches long] (DETAIL “B” in **FIGURE 17.3**).
6. Position the batteries into the wheelchair. Refer to Removing/Installing Batteries from/into Battery Tray on page 56.

*NOTE: New Batteries **MUST** be fully charged **BEFORE** using, otherwise the life of the batteries will be reduced.*

7. If necessary, charge the batteries. Refer to Charging Batteries on page 61.

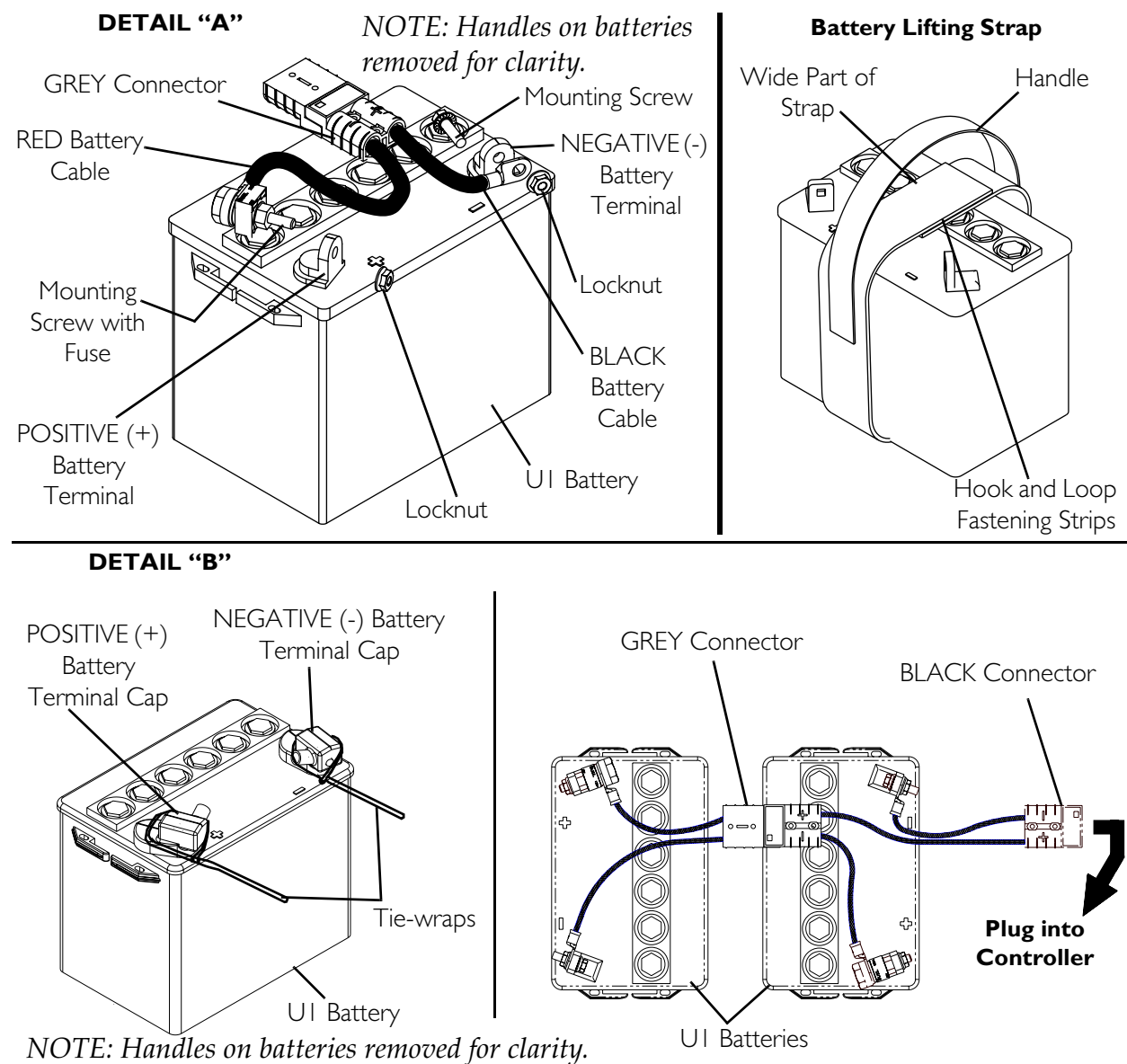


FIGURE 17.3 Connecting/Disconnecting Battery Cables

Disconnecting Battery Cables

WARNING

The use of rubber gloves is recommended when working with batteries.

NEVER allow any of your tools and/or battery cables to contact **BOTH** battery terminals at the same time. An electrical short may occur and serious personal injury or damage may occur.

1. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 49.
2. Disconnect the front battery from the controller (BLACK connector on the standard M71).
3. Disconnect the rear battery from the front battery (GREY connector).
4. Lift the rear battery out of the base frame.
5. Slide front battery rearward and lift out of base frame.
6. Cut the tie-wrap that secures the battery terminal cap in place. See Detail “B” in FIGURE 17.3.
7. Slide terminal cap(s) up on the battery cables.
8. Disconnect POSITIVE (+) RED battery cable from the POSITIVE (+) battery terminal (FIGURE 17.3).
9. Disconnect NEGATIVE (-) BLACK battery cable from NEGATIVE (-) battery terminal (FIGURE 17.3).
10. If equipped with battery lifting straps, separate the hook and loop fastening strips and remove the straps from the batteries.

Charging Batteries

WARNING

NEVER attempt to recharge the batteries by attaching cables directly to the battery terminals.

DO NOT attempt to recharge the batteries and operate the wheelchair at the same time.

DO NOT attempt to recharge the batteries when the wheelchair has been exposed to any type of moisture.

DO NOT attempt to recharge the batteries when the wheelchair is outside.

DO NOT sit in the wheelchair while recharging the batteries.

DO NOT attempt to recharge the batteries using both the on-board battery charger and an independent battery charger (plugged into the joystick charger port) at the same time. Doing so will reduce the life of the batteries.

READ and **CAREFULLY** follow the individual instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

CAUTION

New batteries **MUST** be fully charged prior to initial use of the wheelchair.

Always charge new batteries before initial use or battery life will be reduced.

As a general rule, you should recharge your batteries as frequently as possible to assure the longest possible life and to minimize required charging time. Plan to recharge them when you do not anticipate using the wheelchair.

Basic concepts which will help you understand this automatic process are:

The amount of electrical current drawn within a given time to charge a battery is called “charge rate”. If, due to usage, the charge stored in the battery is low, the charge rate is high. As a charge builds up, the charge rate is reduced, and the battery charger rate decreases to a “trickle charge”.

NOTE: If the batteries need to be charged more often or take longer to charge than normal, they may need to be replaced. Contact a qualified technician.

NOTE: The batteries can be charged using the on-board battery charger OR by plugging an independent battery charger into the port located on the front of the joystick.

Battery Charger Operation

WARNING

READ and **CAREFULLY** follow the manufacturer’s instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

NEVER leave the charger unattended when the circuit breaker (charger) is tripping **ON** and **OFF**.

Use of improper extension cord could result in risk of fire and electric shock.

On-Board Battery Charger

NOTE: For this procedure, refer to FIGURE 17.4.

WARNING

When using an extension cord, use only a three wire extension cord having at least **16 AWG (American Wire Gauge)** wire and the same or higher electrical rating as the device being connected.

Ensure the pins of the extension cord plug are the same number, size, and shape as those on the charger.

DO NOT, under any circumstances, cut or remove the round grounding plug from the charger **AC** cable plug or the extension cord plug.

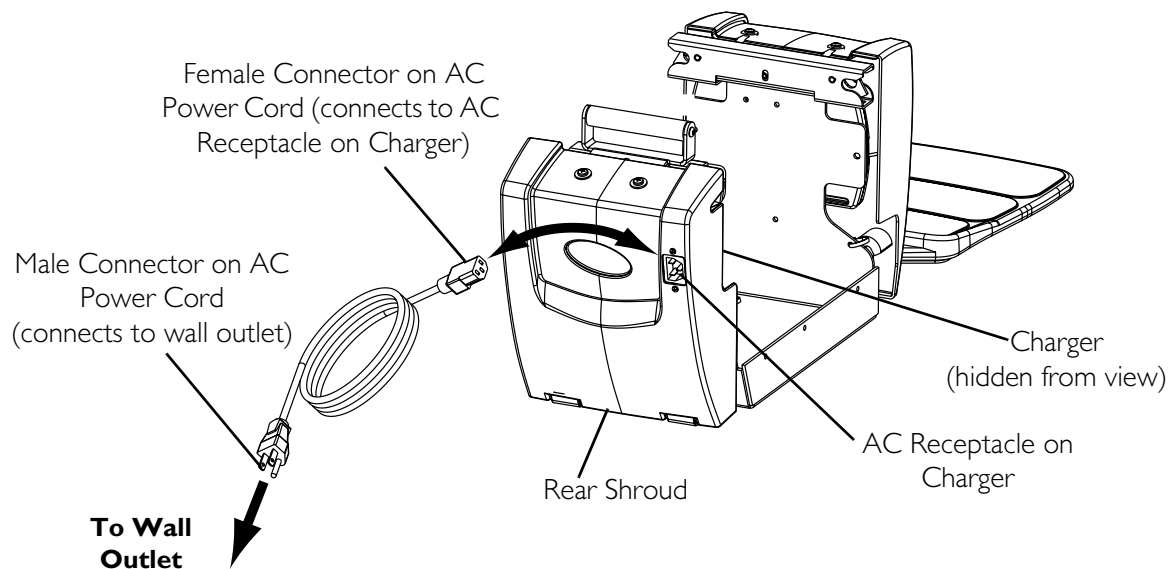
Three prong to two prong adapters should not be used. Use of three prong adapters can result in improper grounding and present a shock hazard to the user.

NOTE: The On/Off LED indicator light and the charger LED indicator light are located on the top of the charger on the rear of the wheelchair. Open rear shroud to view indicator lights. Refer to Removing/Installing the Shrouds on page 51.

1. Plug the female connector of the AC power cord (supplied) to the AC receptacle on the charger and plug in the male connector on the AC power cord into the wall outlet.
2. The On/Off LED indicator illuminates solid Red indicating that the charger is ON.
3. If the On/Off LED indicator is “blinking” Red, this is abnormal. Unplug AC power cord from the on-board battery charger and wall outlet. Contact Invacare at the number listed on the back page of this manual.
4. When the On/Off LED indicator light is Off, charger is Off.
5. When the CHARGE LED indicator light is yellow, the batteries are charging.
6. When the CHARGE LED indicator light is solid Green, the batteries are fully charged (as their condition will allow). At this point, the charger automatically stops charging.
7. When charging is complete, unplug the male connector of the AC power cord from the wall outlet and then unplug the female connector of the AC power cord from the AC receptacle on the charger.

⚠ WARNING

DO NOT operate wheelchair with AC power cord attached to the wheelchair.



ON/OFF INDICATOR	STATUS
SOLID RED	Charger On
“BLINKING” RED	Abnormal
LED “OFF”	Charger Off

CHARGING INDICATOR	STATUS
YELLOW	Charging
“BLINKING” GREEN	Output not connected
SOLID GREEN	Fully charged
LED “OFF”	Charger disconnected

FIGURE 17.4 On-Board Battery Charger

Charging Using an Independent Charger Plugged Into the Joystick

⚠ WARNING

READ and **CAREFULLY** follow the individual instructions for each charger (supplied or purchased). If charging instructions are not supplied, consult a qualified technician for proper procedures.

DO NOT attempt to recharge the batteries using both the on-board battery charger **AND** an independent battery charger (plugged into the joystick charger port) at the **SAME** time. Doing so will reduce the life of the batteries.

CAUTION

Only use a charger approved by Invacare when charging through the joystick on this wheelchair model.

DO NOT use an independent charger with an output rating of over **8A (Amps)**. Otherwise, damage may occur.

NOTE: For this procedure, refer to FIGURE 17.5.

NOTE: The charger port located on the front of the joystick requires the use of an independent charger. The independent charger is NOT supplied with the wheelchair.

1. Attach the battery charger connector to the charger port on the front of the joystick.
2. Plug the charger's AC power cord or extension into the grounded 110-volt wall outlet.
3. When charging is complete, turn charger off.
4. Disconnect output cable from joystick charger port

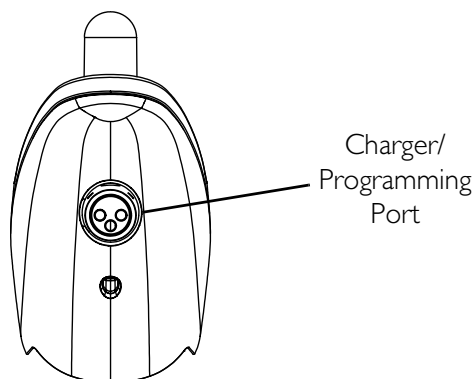


FIGURE 17.5 Charging Using an Independent Charger Plugged Into the Joystick

SECTION 18—ELECTRONICS

⚠ WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

Before performing any maintenance, adjustment or service verify that **ON/OFF** switch on the joystick is in the **OFF** position.

Repositioning Joystick

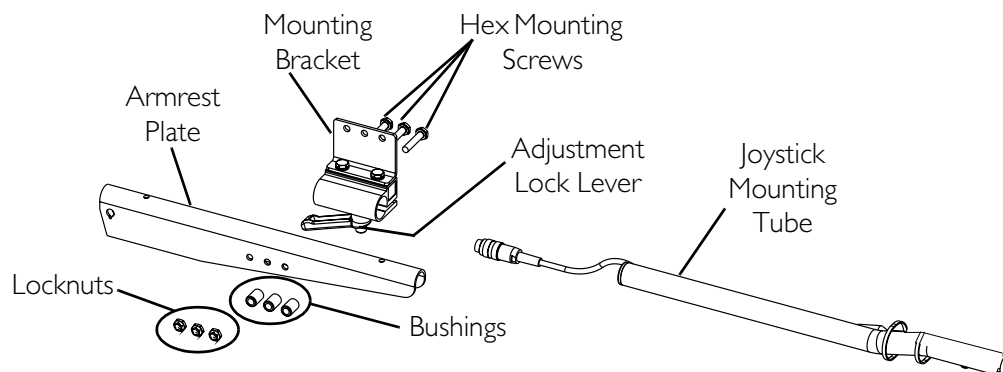
NOTE: For this procedure, refer to FIGURE 18.1.

NOTE: Take note of position and orientation of mounting hardware for reinstalling the joystick assembly.

1. Turn the adjustment lock lever to release the joystick mounting tube from the mounting bracket.
2. Remove the joystick from the wheelchair.
3. Remove the three hex mounting screws, bushings and locknuts that secure the mounting bracket to the three mounting holes on the armrest plate.

NOTE: The mounting bracket is mounted to the inside of the armrest plate.

4. Reposition the mounting bracket on the opposite armrest plate.
5. Using the three hex mounting screws, bushings and locknuts secure the mounting bracket to the three mounting holes of the armrest plate.
6. If necessary, perform the following to reposition the adjustment lock:
 - A. Slide the adjustment lock from the mounting bracket.
 - B. Rotate adjustment lock 180° and slide adjustment lock over the opposite end of the mounting bracket.
7. Slide joystick mounting tube through the mounting bracket to the desired position and secure adjustment lock to tube by turning lever on adjustment lock.



NOTE: Joystick not shown.

FIGURE 18.1 Repositioning Joystick

Disconnecting/Connecting the Joystick

NOTE: For this procedure, refer to FIGURE 18.2.

Disconnecting

1. Hold the light GREY collar portion of the joystick connector with one hand and the controller connector on the wheelchair in the other and disconnect them by pulling them apart (DETAIL "A" of FIGURE 18.2).

Connecting

⚠ WARNING

The joystick connector and controller connector fit together in one way only; DO NOT force them together.

1. Hold the light GREY collar portion of the joystick connector with one hand and the controller connector on the wheelchair in the other and align them; then lightly push to engage the joystick connector and the controller connector (DETAIL "A" of FIGURE 18.2).

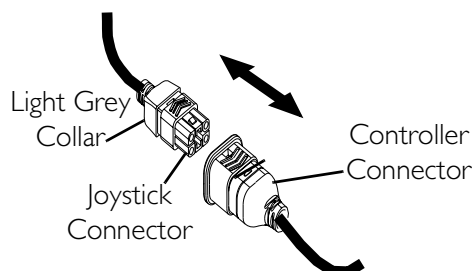


FIGURE 18.2 Disconnecting/Connecting the Joystick

SECTION 19—TRANSPORT

⚠ WARNING

After **ANY** adjustments, repair or service and **BEFORE** use, make sure that all attaching hardware is tightened securely - otherwise injury or damage may result.

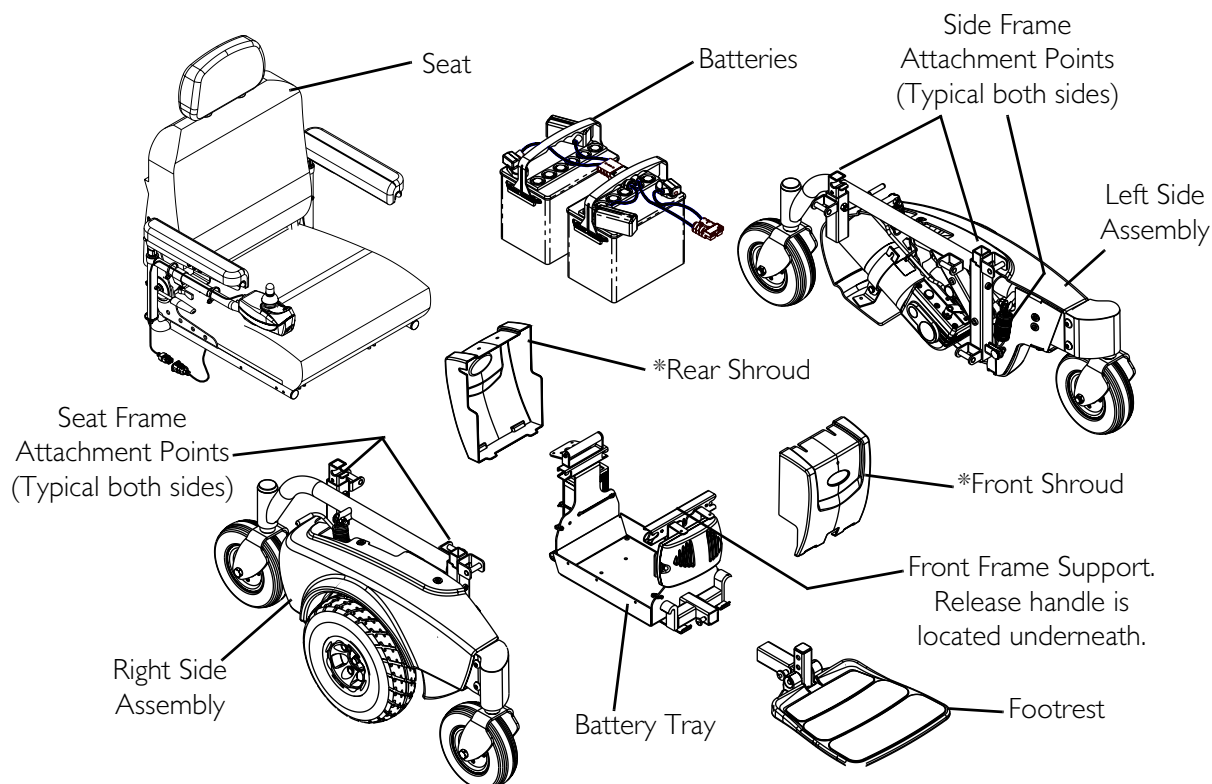
For the following procedures, make sure the **ON/OFF** switch on the joystick is in the **OFF** position.

CAUTION

All cables are securely tie-wrapped in place before being shipped. If any changes are made to the locations of the tie-wrapped cables, the customer must verify that they are clear from being pinched in any of the latching points of the “take-apart” side-frames.

Cables **MUST** be routed and secured properly to ensure that they **DO NOT** become entangled or damaged during normal operation of seating system.

Transporting the Wheelchair



**NOTE: Front and rear shrouds are removable but removing the shrouds is not required for transporting.*

FIGURE 19.1 Transporting the Wheelchair

Disassembly

NOTE: For this procedure, refer to FIGURE 19.2 on page 70.

WARNING

The joystick *MUST* be turned OFF and disconnected before attempting to remove the seat - otherwise personal injury, damage to the wheelchair and/or surrounding property may result. See Note below.

The weight of the van seat is 47 lbs and weight of each of the side frames is 39 lbs. It is recommended that two people pick up these components together - otherwise injury may result.

NOTE: To remove the seat, the seat is flipped up and the arm is rotated backwards which results in the joystick facing the ground. The wheelchair could be inadvertently activated by the joystick coming in contact with the ground.

1. Turn the joystick off and disconnect. Refer to Disconnecting/Connecting the Joystick on page 66.

CAUTION

When flipping back the seat, be sure to maintain a grip on the seat so it does not flip over the back of the base frame - otherwise damage to the wheelchair may result.

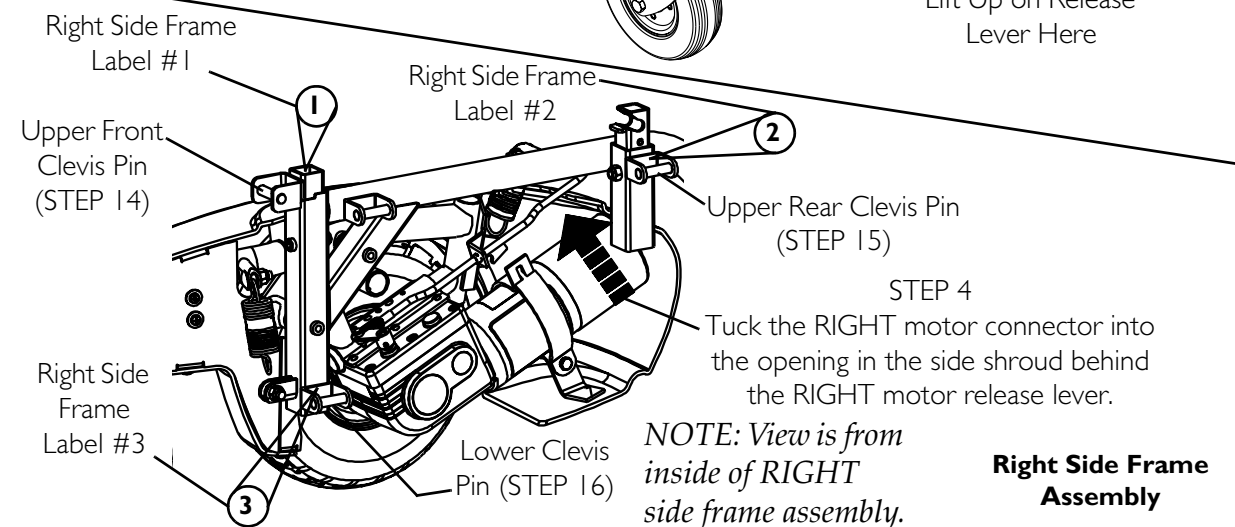
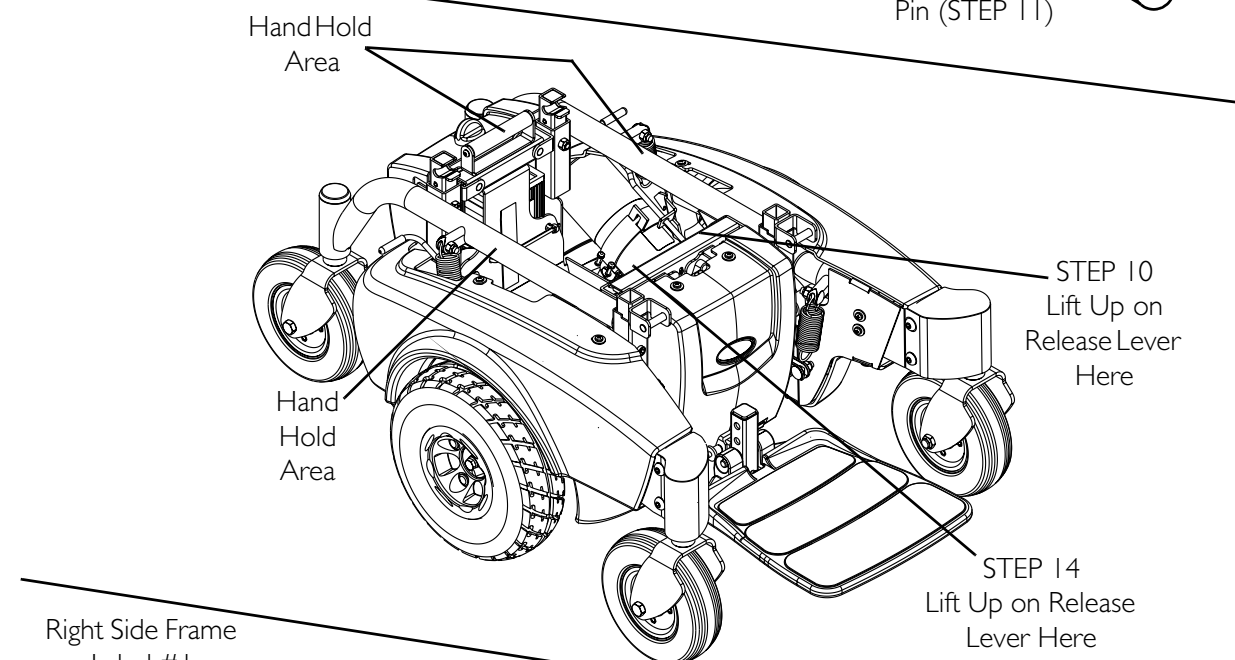
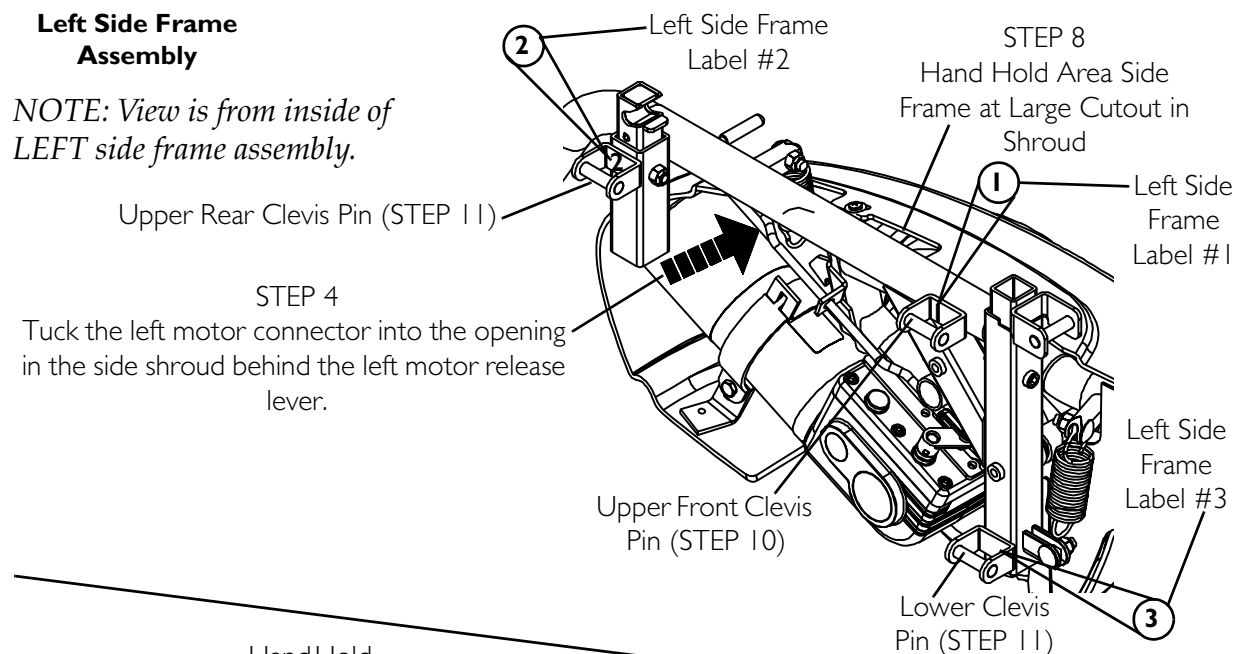
-
2. Remove the seat. Refer to Removing/Installing the Seat Assembly on page 37.
 3. While standing at the rear of the wheelchair base, disconnect the left motor connector from the controller and insert the motor connector into the opening in the side shroud behind the left motor release lever.
 4. Disconnect the right motor connector from the controller and insert the motor connector into the opening in the side shroud behind the right motor release lever.
 5. Disconnect the rear battery from the front battery (GREY connector).
 6. Disconnect the front battery from the controller (BLACK connector on the standard M71).
 7. Remove the rear battery and place on the ground away from the wheelchair base.
 8. Slide the front battery rearward then remove and place on the ground away from the wheelchair base.

Removing the Side Frame Assemblies

9. Using your left hand, grip the left side frame at the large cutout in the side shroud.
10. Using your right hand, lift up on the frame release lever at the front of the battery section on the left side (Left Side Frame Label #1).
11. While the frame release lever is activated, separate the upper front clevis pin (Left Side Frame Label #1) and upper rear clevis pin (Left Side Frame Label #2) away from the battery section while simultaneously lifting the frame release lever and battery section.
12. Continue lifting the battery section with the right hand until the battery section lifts completely away from the lower clevis of the left side frame (Left Side Frame Label #3).
13. Slide the left side frame away from the battery section and lay down on it's side or leave in an upright position by turning both the front and rear caster inward.
14. Repeat STEPS 9-13 for the opposite side frame assembly.
15. Store the seat assembly, left and right side frames, battery section and batteries safely and securely as required in your vehicle. Side frames should be stored on their side to prevent them from tipping over.

Left Side Frame Assembly

NOTE: View is from inside of LEFT side frame assembly.



NOTE: View is from inside of RIGHT side frame assembly.

Right Side Frame Assembly

FIGURE 19.2 Disassembly

Assembly

CAUTION

When reassembling the base frame be sure that the motor, battery and joystick leads are positioned away from any of the three side frame attachment points (FIGURE 19.3) and the four seat frame attachment points (FIGURE 19.3) - otherwise pinched cables could result. It is recommended that the cables from the controller are draped over the front of the shroud (FIGURE 19.2) and tuck the motor leads (from each side frame) behind the rear spring in the side shroud (FIGURE 19.2).

NOTE: For this procedure, refer to FIGURE 19.3 on page 72.

Installing the Side Frame assemblies onto the Battery Tray

1. Using your right hand, grip the right side frame at the hand hold area (See FIGURE 2) and slide close to the battery section.
2. Using your left hand, grip the handle on the battery section and rotate the battery section to align the battery tray hook (Battery Tray Label #3) with the lower clevis pin (Right Side Frame Label #3).
3. Continue sliding the right side frame towards the battery section and guide the hook onto the front lower clevis pin.
4. Continue lifting the handle on the battery section and guide the rear upper clevis pin (Right Side Frame Label #2) into the slot on the rear of the battery tray (Battery Tray Label #2).
5. Push right side frame towards the battery section until an audible click is heard to confirm that the front upper clevis pin (Right Side frame Label #1) is locked in place (Battery Tray Label #1).
6. Repeat STEPS 1 to 5 for the opposite side frame.

Installing the Batteries

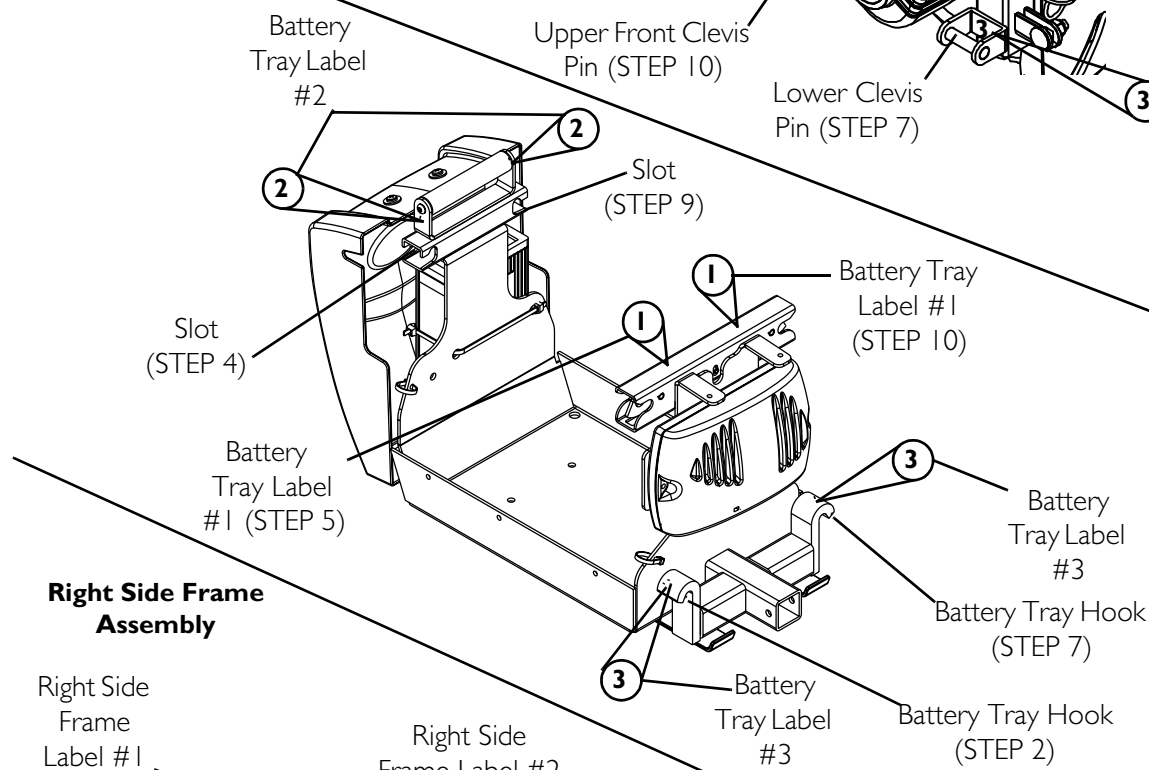
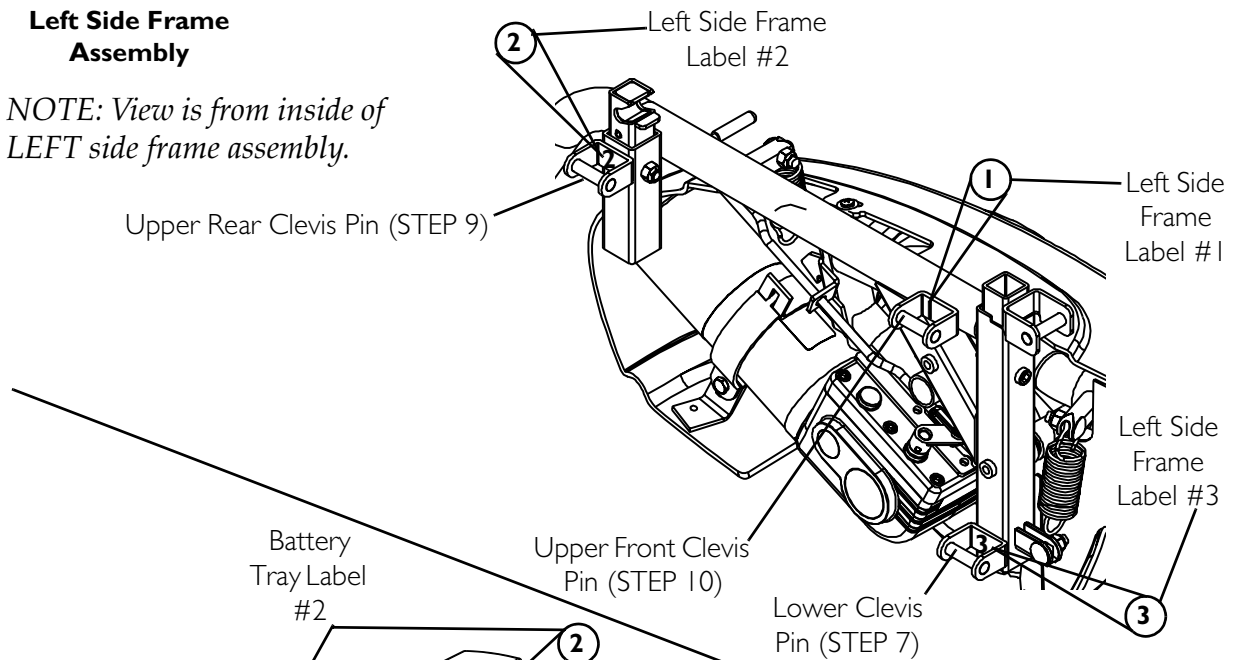
7. Insert front battery first with battery terminals towards the front of the wheelchair and ensure front battery is sitting firmly in the bottom of the battery tray. Slide front battery forward into position.
8. Insert rear battery with battery terminals towards the front of the wheelchair and ensure battery is sitting in the bottom of the battery tray.
9. Connect the rear battery to the front battery (GREY connector).
10. Connect the front battery to the controller (BLACK connector on the standard M71).

Final Assembly

11. Connect the right motor lead to the right motor connector. Align the RED connectors on both the lead and connector.
12. Connect the left motor lead to the left motor connector. Align the RED connectors on both the lead and connector.
13. Install the seat. Refer to Removing/Installing the Seat Assembly on page 37.
14. Connect the joystick cable. Refer to Disconnecting/Connecting the Joystick on page 66.

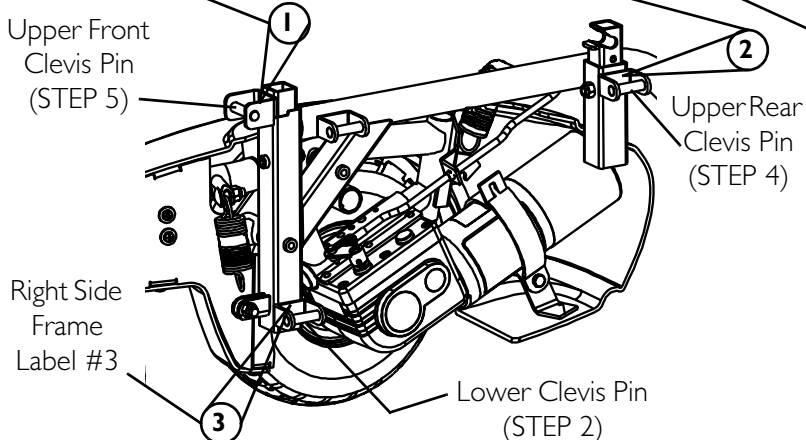
Left Side Frame Assembly

NOTE: View is from inside of LEFT side frame assembly.



Right Side Frame Assembly

Right Side Frame Label #1



NOTE: View is from inside of right side frame assembly.

FIGURE 19.3 Assembly

NOTES

NOTES

GLOBAL LIMITED WARRANTY (EXCLUDING CANADA)

PLEASE NOTE: THE WARRANTY BELOW HAS BEEN DRAFTED TO COMPLY WITH FEDERAL LAW APPLICABLE TO PRODUCTS MANUFACTURED AFTER JULY 4, 1975.

This warranty is extended only to the original purchaser who purchases this product within any country excluding **CANADA** when new and unused from Invacare or a dealer. This warranty is not extended to any other person or entity and is not transferable or assignable to any subsequent purchaser or owner. Coverage under this warranty will end upon any such subsequent sale or other transfer of title to any other person. For product purchased in Canada, please refer to the **Canada Limited Warranty**.

This warranty gives you specific legal rights and you may also have other legal rights which vary from state to state.

Invacare warrants the base frame to be free from defects in materials and workmanship for a period of five (5) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants the seat frame to be free from defects in materials and workmanship for a period of three (3) years from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all electronics and electrical components (excluding batteries), motors and gearboxes to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all batteries to be free from defects in materials and workmanship for a period of six (6) months from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. Invacare warrants all remaining components (excluding all upholstered materials, padded materials, tires and wheels) to be free from defects in materials and workmanship for a period of one (1) year from the date of purchase from Invacare or a dealer, with a copy of the seller's invoice required for coverage under this warranty. If within such warranty periods any such product component shall be proven to be defective, the product component shall be repaired or replaced, at Invacare's option. This warranty does not include any labor or shipping charges incurred in replacement part installation or repair of any such product. Invacare's sole obligation and your exclusive remedy under this warranty shall be limited to such repair and/or replacement.

For warranty service, please contact the dealer from whom you purchased your Invacare product. In the event you do not receive satisfactory warranty service, please write directly to Invacare at the address on the bottom of the back cover. Provide dealer's name address, date of purchase, indicate nature of the defect and, if the product is serialized, indicate the serial number. Do not return products to our factory without our prior consent.

LIMITATIONS AND EXCLUSIONS: THE FOREGOING WARRANTY SHALL NOT APPLY TO SERIAL NUMBERED PRODUCTS IF THE SERIAL NUMBER HAS BEEN REMOVED OR DEFACED, PRODUCTS SUBJECT TO NEGLIGENCE, ACCIDENT, IMPROPER OPERATION, MAINTENANCE OR STORAGE, COMMERCIAL OR INSTITUTIONAL USE, PRODUCTS MODIFIED WITHOUT INVACARE'S EXPRESS WRITTEN CONSENT (INCLUDING, BUT NOT LIMITED TO, MODIFICATION THROUGH THE USE OF UNAUTHORIZED PARTS OR ATTACHMENTS); PRODUCTS DAMAGED BY REASON OF REPAIRS MADE TO ANY COMPONENT WITHOUT THE SPECIFIC CONSENT OF INVACARE, OR TO A PRODUCT DAMAGED BY CIRCUMSTANCES BEYOND INVACARE'S CONTROL, AND SUCH EVALUATION WILL BE SOLELY DETERMINED BY INVACARE. THE WARRANTY SHALL NOT APPLY TO PROBLEMS ARISING FROM NORMAL WEAR AND TEAR OR FAILURE TO ADHERE TO THE PRODUCT INSTRUCTIONS. A CHANGE IN OPERATING NOISE, PARTICULARLY RELATIVE TO MOTORS AND GEARBOXES DOES NOT CONSTITUTE A FAILURE OR DEFECT AND WILL NOT BE REPAIRED; ALL DEVICES WILL EXHIBIT CHANGES IN OPERATING NOISE DUE TO AGING.

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